DOCUMENT RESUME

ED 189 044 SP 016 216

TITLE	Health, United States, 1979.
INSTITUTION	National Center for Health Statistics (DHEW/PHS), Hyattsville, Md.
SPONS AGENCY	Public Health Service (DHEW), Arlington, Va.
REPORT NO	DHEW-PHS-80-1232
PUB DATE	79
NOTE	258p.
AVAILABLE FROM	Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.
EDRS PRICE	MF01/PC11 Plus Postage.
DESCRIPTORS	Age Groups: *Health Needs: *Health Personnel: *Health Services: *Medical Care Evaluation: Minority Groups: Nutrition: *Public Health: Public Health Legislation

ABSTRACT

This study presents statistics concerning recent trends in the health care sector and detailed discussions of selected current health issues. The first part of this report consists of four chapters, each covering a current issue. Chapter one presents recent data on the health characteristics of minority groups in the U.S. Chapter two discusses the relationship between diet, nutrition, and health in the context of the Dietary Goals of the U.S. Senate Select Committee on Nutrition and Human Needs. The third chapter reviews and analyzes the supply, training, and deployment of nonphysician health care providers in primary care. The last chapter describes a current program that is designed to improve medical technology assessment. The second half of this report is a statistical section organized around four themes: 1) health status and determinants, 2) utilization of health resources, 3) health care resources, and 4) health care expenditures. Strong interrelationships exist between different aspects of the health care system, and some of these interrelationships are examined in this report. (CJ)

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Public Health Service
Office of Health Research, Statistics, and Technology

Health United States 1979

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Office of Health Research, Statistics, and Technology
National Center for Health Statistics
National Center for Health Services Research
3700 East-West Highway
Hyattsville, Maryland 20782

DHEW Publication No. (PHS) 80-1232

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402

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FOREWORD

Health, United States, 1979 is the fourth annual report on the health status of the Nation submitted by the Secretary of Health, Education, and Welfare to the President and Congress of the United States in compliance with Section 308 of the Public Health Service Act. It presents, in a single volume, statistics concerning recent trends in the health care sector and detailed discussions of selected current health issues.

This report was compiled by the National Center for Health Statistics with the assistance of the National Center for Health Services Research of the Office of Health Research, Statistics, and Technology. The National Committee on Vital and Health Statistics served in a review capacity.

The report is divided into two parts. Part A consists of four analytic and review chapters on subjects of current interest in the health field. Part B consists of 84 statistical tables with interpretive text. The appendixes include descriptions of the data sources, a glossary, and a guide to the tables.

Each chapter in Part A discusses a single public health issue as follows:

- Chapter I presents recent data on the health characteristics of minority groups in the United States. Although some barriers to health care have been reduced, substantial differences still exist in health status when minorities are compared with the white majority. Reduction and elimination of these differences are major goals of Federal policy.
- Chapter II discusses the relationship between diet, nutrition, and health in the context of the Dietary Goals of the U.S. Senate Select Committee on Nutrition and Human Needs. The role of diet in the etiology of selected diseases is reviewed, and recent data on the dietary intake and nutritional status of the U.S. population are provided.
- Chapter III reviews and analyzes the supply, training, and deployment of nonphysician health care providers in primary care. The extent to which these providers can supplement and extend the physician supply in underserved areas is examined. The legal and financial considerations that affect their utilization are also discussed.
- Chapter IV describes a current program of the National Institutes of Health (NIH) that is designed to improve medical technology assessment—a program that is the forerunner of a larger effort in technology assessment marked by the creation of the National Center for Health Care Technology. New technologies are often adopted before adequate information is available on potential benefits and risks. In addition, some well-validated innovations have been slow to reach the practicing physician. Reviews of three medical technologies that were examined by the NIH program for efficacy and safety are presented.

The statistical section, Part B, is organized around four major themes:

- Health Status and Determinants.
- Utilization of Health Resources.
- Health Care Resources.
- Health Care Expenditures.

The tables in Part B contain data that are relevant to policy and administrative decisions and that meet the specifications of Section 308 of the Public Health Service Act. This edition of *Health, United States* differs from others in that the analyses emphasize trends and comparisons over time rather than cross tabulations of several variables for a single data year. This difference improves the usefulness of the volume by making it a standard reference source that illustrates changes in health status and the health care system. Future editions will be updated for more recent data years using similar tables.

Another difference is that the tables in this volume present age-adjusted data more frequently than in previous volumes. This was necessary for two reasons: (1) the elderly constitute a growing proportion of the U.S. population, and (2) several demographic subgroups of the population have different age structures. By adjusting for age, data can be compared more easily over time and for different groups.

Although the tables in Part B are divided into separate topical sections, the trends considered under different aspects of the health care system are not independent. Strong interrelationships exist, and a change in one area of the health care system may affect other areas. However, only some of these interrelationships are examined in this report.

ACKNOWLEDGMENTS

Overall responsibility for planning and coordinating the content of this report rested in the Division of Analysis, National Center for Health Statistics, under the supervision of Jacob J. Feldman, Joel C. Kleinman, and Lois A. Fingerhut. Donald E. Goldstone, National Center for Health Services Research (NCHSR), was responsible for coordinating the NCHSR portion of the report.

The principal authors of each chapter in Part A and each section of Part B are identified. In addition to credited authorship of particular sections, the following contributors are especially noteworthy:

Production of the report was supervised by Madelyn A. Lane with the assistance of Jeanenne M. Barry, Ella H. Berry, Patricia L. Bridges, Dorothea J. Donahue, and Rebecca A. Placek. Statistical review was provided by Andrea N. Kopstein, Steven R. Machlin, and Barbara G. Weichert with the assistance of Mitchell B. Pierre, Jr., and Dawn M. Rubin. Alice E. Haywood, Margot A. Kemper, Geraldine A. Michael, John E. Mounts, and Audrey Shipp furnished editorial review. Jean F. Williams and Patricia A. Szafranski served as computer programming consultants. Ethel Black, James DeLozier, Robinson Fulwood, Esther Hing, Harold T. McLemore, Mary A. Moien, Michael Mungioli, and Aurora A. Zappolo provided tables for inclusion in the report.

Revelyn K. Eisenstadt, Mavis B. Prather, and Mabel G. Smith provided statistical assistance on the chapter "Health Status of Minority Groups."

HIGHLIGHTS

I. Health Status and Determinants

- Birth rates for teenagers have continued to decrease since 1972, reaching 34.5 births per 1,000 females 15–17 years of age in 1977.
- Infant mortality has decreased 5 percent per year since 1965, dropping to a rate of 14 infant deaths per 1,000 live births in 1977.
- Life expectancy at birth continues to increase, reaching a record 73.2 years for Americans in 1977.
- Heart disease mortality has decreased by about the same amount in the first 7 years of this decade as it did in the 20-year period from 1950 to 1970.
- Cancer mortality continues to decrease for the population under 45 years of age and has recently begun to decline for those 45–49 years of age.
- Fewer teenagers and young adults are starting to smoke cigarettes now than a decade ago.

But . . .

- Death rates among teenagers—particularly those for suicide and motor vehicle accidents—increased between 1976 and 1977.
- Only 59 percent of black women, compared with 77 percent of white women, began prenatal care during the first trimester of pregnancy.
- Birth rates for black teenagers remain much higher than rates for white teenagers—34.2 versus 10.9 births per 1,000 females 10–17 years of age.
- The black infant mortality rate in 1977 was still twice as high as the rate for white infants—23.6 versus 12.3 infant deaths per 1,000 live births.

II. Utilization of Health Resources

- The trend in the last decade has been toward equal use of physician services by income and race.
- Hospital utilization stabilized between 1972 and 1977, after a period of relatively rapid increase during the mid-1960's.
- The trend in mental health care has been toward more outpatient care and day treatment instead of institutionalization in psychiatric facilities.

But . . .

- Rates for several common surgical procedures increased substantially between 1967 and 1977; the rate for cesarian sections doubled and the rate for hysterectomies increased 22 percent for women 15–44 years of age.
- Financial barriers to adequate dental care still exist for people in low and middle income groups.
- Socioeconomic status continues to influence the need for medical care, with the poor reporting more illness and disability than the nonpoor.

III. Health Care Resources

- Regional variations in physician-population ratios narrowed somewhat between 1972 and 1977.
- Recent trends in graduate medical education suggest a decline in the ratio of surgical to medical specialists during the 1980's.
- The proportion of physicians working in groups practice has increased from 18 percent in 1969 to 24 percent in 1975.
- A decrease of 149,147 psychiatric hospital beds between 1972 and 1977 can be attributed to the closing of many long-stay psychiatric hospitals.
- The rapid growth in the number of nursing home beds witnessed in the 1960's and early 1970's has abated.

But . . .

- In 1977, 36 States had higher bed-population ratios and 46 States had lower occupancy rates than those recommended in the National Guidelines for Health Planning.
- Substantial regional variations in physician-population ratios still existed in 1977, with ratios ranging from 14.4 active non-Federal physicians per 10,000 population in the North Central Region to 20.4 per 10,000 in the Northeast Region.

• About 27 million people lived in locales designated as Primary Medical Care Manpower Shortage Areas as of December 1978.

• The proliferation of technology in hospitals across the country has created concern about duplication of services and about its impact on health expenditures.

• Another result of increased technology has been an increase in the ratio of full-time equivalent employees to patients in community hospitals and a consequent rise in costs per patient day.

IV. Health Care Expenditures

• Since the implementation of the Medicare and Medicaid programs, financial barriers to health care have diminished for the elderly and the poor.

• In 1978, national health expenditures in the United States totaled $192.4 billion, an average of $863 per person and comprising 9.1 percent of the gross national product.

But . . .

• In 1978, increases for medical care prices outpaced increases for all other items on the Consumer Price Index, except for food.

• National health expenditures have more than doubled during the 1970's.

• National health expenditures continue to represent an increasing proportion of the gross national product.

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Part A: Selected Health Topics

CHAPTER I

Health Status of Minority Groups[a]

Introduction

As information on the health of Americans increases, interest in the health status of the Nation's minorities grows. This chapter presents comparative information on a number of health topics, including health status, use of health services, mortality, and life expectancy. Available data are presented for the black and Hispanic minorities as well as for the white majority; some information is presented for two other minority groups—"Asians or Pacific Islanders" and "American Indians or Alaskan Natives." Lack of adequate data bases for specific components of the Hispanic population precludes the presentation of such data. Discussions of the problems of racial and ethnic classification as they relate to health data, sources of data, and plans for forthcoming new data on the health of minorities are in the Technical Note following the Summary.

Social and economic determinants of health

Population size, age and sex structure, socioeconomic composition, and other characteristics differentiate minority groups from the white population. Because these characteristics influence health, they must be considered when assessing the health status of minority groups.

Recent efforts by the U.S. Bureau of the Census and other statistical agencies have produced a series of population data on blacks and Hispanics (U.S. Bureau of the Census, 1978a and 1979a). Population data for Asian-Americans, American Indians, and other minority groups are still scarce, but they are becoming more available. Information from recent household surveys is sufficient to describe the basic demographic and socioeconomic characteristics of the largest racial and ethnic minorities, that is, blacks, Hispanics, and Asians or Pacific Islanders. The population profile presented in this section is based on annual averages of the civilian noninstitutionalized population derived from the 1976 and 1977 Health Interview Surveys. These surveys are the source of most measures of minority health presented in this chapter.

Historically, the largest minority group has been and continues to be the black population. An estimated 23 million black people not of Hispanic origin (table A) represent 11 percent of the population. Geographically, the black population is concentrated in the South but less so than in the past. As a result of migration to other regions, only one-half of the black population now lives in the South. Blacks, like other minority groups, are much more urbanized than whites. The proportion living in central cities (57 percent) is more than twice the proportion of the white population not of Hispanic origin (24 percent).

Hispanics are the Nation's second largest minority group. Numbering an estimated 12 million, they represent 5.6 percent of the national population, excluding Puerto Rico (table A). Within the Hispanic population, the 7 million of Mexican origin or descent are the most numerous. The second largest group is made up of the 1.7 million Puerto Ricans living on the U.S. mainland, principally in the Northeast. Cubans number 774,000 and are concentrated in the Northeast and South. All three Hispanic groups are more urbanized than the white population not of Hispanic origin.

An estimated 3 million persons are of Asian or Pacific Island origin; most live in the West and in highly urbanized areas.

The most recent reliable estimates of the total numbers of American Indians and Alaskan Natives are from the 1970 Census of Population. At that time, American Indians and Alaskan Natives numbered 827,000 (U.S. Bureau of the Census, 1975). This figure represents a 51-percent increase over the 1960 count, a much larger increase than can be explained by underenumeration or overenumeration or by births and deaths between the two census years. Shifts in racial identification have been hypothesized as an important factor influencing counts of the American Indian population (Passel, 1976).

[a] Prepared by Frank Godley, Ph.D., and Ronald W. Wilson, Division of Analysis, National Center for Health Statistics. Evelyn Glass and A. Joan Klebba, Division of Vital Statistics, National Center for Health Statistics, assisted with the mortality section. The Indian Health Section was prepared by Mozart I. Spector, Office of Program Statistics, Indian Health Service.

Table A. Population and percent distribution, according to race or ethnicity, region, and place of residence: United States, average annual 1976–77

Population, region, and place of residence	Race or ethnicity						
	Black	Hispanic				Asian or Pacific Islander	White
		Total[1]	Mexican	Puerto Rican	Cuban		
	Number in thousands						
Population	23,066	11,913	7,206	1,739	774	2,951	160,129
	Percent distribution						
Geographic region	100	100	100	100	100	100	100
Northeast	18	21	1	80	32	18	25
North Central	20	8	7	9	3	11	30
South	54	30	36	5	56	12	28
West	8	42	56	6	9	59	18
Place of residence	100	100	100	100	100	100	100
SMSA	76	84	79	95	98	93	67
Central city	57	48	42	74	44	47	24
Outside central city	19	35	37	21	53	46	43
Outside SMSA	24	16	21	5	*2	8	33

[1] Includes others of Hispanic origin not shown as a separate category.

NOTE: Racial and ethnic categories are mutually exclusive.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics: Data from the Health Interview Survey.

Compared with the white population, minority populations are generally younger (table B). The Asian population has a large concentration of people 17-44 years of age. However, the Hispanic population has the youngest age structure, a consequence of relatively high fertility levels. In 1977, the number of lifetime births expected by married women of Spanish origin 35-39 years of age was 23 percent more than expected by married white women in that age group (U.S. Bureau of the Census, 1978b).

Table C presents a profile of selected socioeconomic characteristics of the prinicipal minority groups. The socioeconomic status of minorities is generally low, except for the relatively high income and education levels of the Asian or Pacific Islander group. The proportion of black families with incomes less than $5,000 is about 3 times the proportion of white families; for Hispanics, the proportion is about 2 times that for the white population not of Hispanic origin. Blacks and Hispanics are underrepresented at the higher income and educational levels, despite reductions of these inequalities during the 1960's and 1970's (Farley and Hermalin, 1972; U.S. Commission on Civil Rights, 1978).

Family size and composition of minorities are also important to consider in analyses of health and its interrelationships with socioeconomic status. On a per capita basis, levels of family income and other resources are decreased by the relatively large families of most minority groups. Three of every 10 black and Hispanic families consisted of five or more persons, compared with 2 of every 10 white families (U.S. Bureau of the Census, 1978c).

Table B. Percent distribution of age, according to race or ethnicity: United States, average annual 1976–77

Age	Race or ethnicity			
	Black	Hispanic	Asian or Pacific Islander	White
	Percent distribution			
All ages	100	100	100	100
Under 17 years	35	41	32	27
17–44 years	41	42	49	40
45–64 years	17	13	14	22
65 years and over	8	4	5	11

NOTE: Racial and ethnic categories are mutually exclusive.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics: Data from the Health Interview Survey.

Table C. Percent of population with selected social and economic characteristics, according to race or ethnicity: United States, average annual 1976-77

Social and economic characteristic	Race or ethnicity			
	Black	Hispanic	Asian or Pacific Islander	White
Family income	Percent of population			
Less than $5,000	30	19	12	11
$5,000–$9,999	29	33	18	19
$10,000–$14,999	19	24	20	23
$15,000 or more	22	24	51	47
Educational attainment[1]				
High school graduate or more	50	42	78	70
College graduate	7	5	30	15
Employment status[2]				
Unemployed	12	9	8	6
Marital status[1]				
Married, spouse present	47	63	65	67

[1] Persons 17 years and over.

[2] Persons 17 years and over in the labor force.

NOTE: Racial and ethnic categories are mutually exclusive.

Source: Division of Health Interview Statistics, National Center for Health Statistics: Data from the Health Interview Survey.

In addition to being larger, there are more one-parent families among minority groups than in the white population. From the perspective of dependent children under 18 years of age, the percent living with one parent in 1977 was 13 percent of white children, 20 percent of Hispanic children, and 43 percent of black children (U.S. Bureau of the Census, 1978a and 1979b).

Health status and use of health services[1]

In general, the health status of minorities has improved during recent years, and their use of health services has increased. Yet, many measures indicate that the health status of minorities is not as good as that of the white majority.

Summary data on selected health indicators are shown for white, black, and Hispanic populations by age and family income in tables 1 and 2. Only two income groups were used, partially for ease of data presentation and partially because of small sample size when age, race, and income are cross tabulated. In some instances, comparisons will be made with the Asian population, regardless of age and family income. More extensive analysis of specific health indicators among minorities is currently being conducted by the National Center for Health Statistics (NCHS) and will appear in future NCHS reports.

Health status indicators

Self-perception.—According to data from the Health Interview Survey (HIS), Americans generally perceived their own health favorably. Only about 12 percent of the population perceived their health as "fair" or "poor" (table 1) based on responses to the question: "Compared to other persons your age, would you say your health is excellent, good, fair, or poor?" But, differences among subgroups of the population were marked. Only 11 percent of the white population viewed themselves in "fair" or "poor" health, compared with 19 percent of the black population and almost 13 percent of the Hispanic population. The percent for Asians was similar to that of the white population. This pattern was found for all age groups, although the differences were not as great among the elderly. When family income was taken into consideration, the pattern of perceived health status was still observed for these same subgroups. However, the poor (family income less than $10,000) perceived themselves in poor health more frequently than the nonpoor (family income $10,000 or more),[2] regardless of race or ethnicity.

Limitation of activity.—A measure of the long-term impact of chronic disease is the proportion of the population with limitation of activity resulting from chronic illness. This measure includes people who are unable to perform their usual activity, such as working, keeping house, or going to school; people who are limited in the kind or amount of their usual activity; and people who are limited in their other activities as a result of chronic disease. The pattern for this measure is not as clear as for perceived health status. Marked differences were observed between the poor and the nonpoor, with the poor reporting more limitation of activity (table 1). The data do not indicate the extent to which low income people were limited because they were poor or the extent to which people were poor because activity was limited. Differences between the poor and nonpoor were smallest among children, where the income-depressing effect of illness should be minimal, and among the elderly, where aging probably affects health more than family income. This indicates that the income-depressing effect of illness may indeed be a dominant factor for young and middle-aged adults.

In general, poor-nonpoor differences in the proportion with a limitation of activity within a given racial or ethnic

[1] Most data in this section are from the 1976 and 1977 Health Interview Surveys (HIS). Some data are from the 1971–74 Health and Nutrition Examination Survey (HANES-I). These are the major population-based surveys conducted by the National Center for Health Statistics. A brief description of each can be found in the Technical Note of this chapter.

[2] The words "poor" and "nonpoor" are used here as terms of convenience, and they should not be equated with the more precise poverty terminology based on detailed family income data, family size, and sources of income adopted by the Federal Interagency Council, and used in later sections of this chapter.

group were greater than racial or ethnic group differences in the proportion within either income category. This was especially true for people 45–64 years of age. For them, the rate of limitation of activity among the poor was at least 100 percent greater than that among the nonpoor, but the greatest difference by race or ethnicity was less than 50 percent. Lower levels of limitation of activity were reported for black and Hispanic children than for other children. Among young and middle-aged adults, Hispanics reported the lowest rates of limitation of activity, and the rates for the whites and blacks were similar.

Restricted-activity.—Two other measures of the impact of illness, both chronic and acute, are the total number of restricted-activity days per person per year and the number of bed days per person per year. (Bed days are a subset of restricted-activity days.) Black adults reported more restricted-activity days and bed days than Hispanic or white adults (table 1). This pattern was true for poor and nonpoor groups, but the poor reported considerably more days than the nonpoor. Among children, fewer restricted-activity and bed days were reported for blacks than for Hispanics or whites. This low rate among black children was observed for both the poor and the nonpoor, although the differences were less marked.

Lower rates of restricted-activity days and bed days for black and Hispanic children compared with those for white children and lower proportions with a limitation of activity may appear inconsistent with the finding that more black and Hispanic children were reported to be in fair or poor health. However, a certain amount of disability is "prescribed" by physicians as part of the diagnosis and treatment process, that is, doctors tell children to reduce or limit certain activities; but, black and Hispanic children use physicians less frequently. Therefore, these apparent inconsistencies may not be surprising. Without the measure of perceived health status, these data could well be interpreted that black and Hispanic children receive fewer services because they have less need.

Examination findings

Blood pressure.—During the 1971–74 Health and Nutrition Examination Survey (HANES-I), blood pressure was measured for persons 6–74 years of age. Readings were analyzed primarily in terms of mean systolic and diastolic pressures, but the examinees were classified as to whether or not they had elevated blood pressure (NCHS, 1977a).[3] No real differences in mean pressures existed between white and black children 6–17 years of age. However, the mean systolic and diastolic pressures for blacks 25–74 years of age exceeded the mean levels for whites. The proportion of persons with elevated blood pressure was also greater among black adults than among white adults. The age-adjusted rate of elevated blood pressure for the white population 18–74 years of age was 16.8 per 100, compared with 30.5 per 100 for black adults (crude rate—17.0 versus 28.2). The racial differences tended to be greater among women than among men. The size of the national sample precludes detailed analysis of findings for Hispanic and American Indian populations.

Examinees in HANES-I were asked if they had ever been told by a doctor that they had hypertension. Half (54.9 percent) of the adults with elevated blood pressure reported that they had not been previously told by a doctor that they had hypertension. The proportion of black adults with elevated blood pressure and undiagnosed hypertension was significantly lower than the proportion of white adults. Although the overall prevalence of elevated blood pressure among both whites and blacks has not changed in the past 10 years, a much larger proportion of black males than white males with previously undiagnosed hypertension was found during a study a decade ago than was found in the more recent study (80 percent versus 56 percent, compared with 56 percent versus 65—age adjusted). Decreases were insignificant between the two surveys in the proportion of black females with undiagnosed hypertension. More blacks may know of their elevated blood pressure because physicians and their patients may be more aware of this condition, which is more common among blacks and a major risk factor for heart disease and stroke.

Substantial information on hypertension was also collected during the 1974 Health Interview Survey (HIS). Estimates from HIS of the number of people with hypertension differed somewhat from those derived from HANES because HIS data were collected in household interviews rather than by examination. Information on the characteristics of persons who were aware of their condition is useful (NCHS, 1978a). There were no differences between blacks and whites in the proportion of hypertensives who had ever been prescribed antihypertensive medication (about 75 percent for both). However, a somewhat larger proportion of black than of white hypertensives had stopped taking their medication (25.5 percent versus 17.2 percent, respectively). A larger proportion of blacks than of whites also reported side-effects from their medication. Also, a much larger proportion of blacks than of whites with hypetension reported that they were "bothered" by their condition (74 percent versus 49 percent, respectively).

Nutrition.—Data on caloric and nutrient intake for protein, calcium, iron, vitamins A and C, thiamine, and riboflavin were collected during HANES-I. One of the measures used in analyzing the data was mean nutrient intake. Adequacy of intake was based on the HANES standard for dietary allowances (NCHS, 1973a). While a mean intake measure can hide the fact that subgroups of individuals can have usual nutrient intake far below recommended daily allowances, these data are useful in identifying influences on the diet related to characteristics of broad categories of the population. These data indicate adequate or more than adequate intake of riboflavin and thiamine for all population subgroups defined by poverty

[3] Elevated blood pressure is defined as either systolic pressure of 160 mmHg or more or diastolic pressure of 95 mmHg or more. This term is referred to in the HANES reports on blood pressure as "definite hypertension."

status,[4] race, sex, and age. For protein, calcium, and vitamins A and C, some population subgroups had lower intake than the recommended daily allowances. Calcium intake was lower than recommended allowances for adult black women, regardless of income. Vitamin A intake was below recommended allowances for white adolescents and young adult women in low income groups and for adolescent black women, regardless of income. Protein intake was below the recommended allowances for adolescents, adult women, and older men in the low income group, regardless of race; it was also below recommended allowances for adult black women, older black men, and older white women in the income group above the poverty level. Iron intake was below recommended daily allowances for all females and for males 1-3 years of age, regardless of income (NCHS, 1977b).

Data from HANES-I provide only general estimates of the nutritional status of Hispanics because their relatively small number in the survey precludes detailed comparisons between them and other groups. The average intake of selected nutrients among Hispanics has been analyzed by age and sex and by poverty level (NCHS, unpublished). In general, regardless of age or poverty status, the average intake of protein, calcium, thiamine, and riboflavin among the Hispanic population were well above established standards. Deficiencies were noted for three nutrients. The reported median vitamin A intake and the mean iron intake of teenage and adult Hispanics were below the standards. Also, the mean calcium intake for adult females approached or fell below the standard. The deficiencies in these three nutrients were found regardless of poverty level.

Height and weight measurements were also obtained as a part of HANES-I. Differences in mean height were minimal between whites and blacks for either males or females. The data also suggest little consistent difference in mean weight between white males and black males for different age groups. However, black women had higher mean weights than white women, with differences as great as 20 pounds for groups in the range 35-64 years of age (NCHS, 1976). In addition, more black than white women were found to be obese (based on triceps skinfold measurements) regardless of poverty status. No significant differences in obesity were found between black males and white males.

Visual acuity.—Vision tests were administered to the examinees in HANES-I. Even with usual correction, blacks 4–74 years of age had poorer visual acuity than whites. The greatest racial differences in visual acuity were found between the youngest and oldest age groups. Examinations were also conducted to determine the refraction potential, that is, visual acuity with the best possible correction. Those tests showed evidence of less refraction potential for the black population than for the white population. Refraction potential increased with annual family income, but this association was stronger for whites than for blacks (NCHS, 1977c; NCHS, 1978b).

Dental health.—Detailed dental examinations were given during HANES-I to determine general dental health (NCHS, 1979a). The following comparisons are only between the white and the black populations. White adults 18–74 years of age in all age groups had consistently more decayed, missing, and filled (DMF) teeth than black adults in comparable age groups. However, there were no important differences by race in the number of fillings needed. A Periodontal Index (based on the presence of gingivitis and periodontal disease) was also determined for each examinee. Blacks had considerably more periodontal disease than whites, regardless of age. Blacks at all ages also scored significantly poorer in overall oral hygiene.

Related health characteristics

Cigarette smoking.—Cigarette smoking has been established as "being hazardous to your health." Smoking patterns differ markedly between blacks and whites. (Data will soon be available on other minority groups.) Black males were more likely to be cigarette smokers than white males (46 percent versus 38 percent), but there were no differences between black and white females (about 31 percent) (table 26, Part B). A greater proportion of white than of black smokers had quit smoking, although the proportion of former smokers has increased among both races since 1965.

On the other hand, blacks who smoked cigarettes tended to smoke less than whites. For example, about two-thirds of the black female smokers smoked less than 15 cigarettes per day, compared with only a third of the white female cigarette smokers. The comparable figures for black and white male cigarette smokers are about one-half and one-fifth, respectively. Less than 15 percent of the black male smokers smoked 25 or more cigarettes per day, compared with about 40 percent of the white male smokers.

General psychological well-being.—Findings from HANES-I indicate that self-representation of general psychological well-being differs between males and females and between blacks and whites (NCHS, 1977d; Dupuy, 1978). White males reported the highest level of well-being, with 70 percent having "positive" well-being. Black males and white females reported about the same level, with 54 percent and 58 percent, respectively, having "positive" scores. Black females reported not only the lowest level of positive well-being, with 37 percent having positive scores, but more than half reported moderate to severe levels of distress. Almost a third of the black females showed a level of distress comparable to that reported by three-fourths of an independent sample of mental health patients. These findings would suggest that more than half of the black female adult population of the United States lives in a condition of psychological distress rather than psychological well-being.

[4] The term "poverty status" as used in analysis of HANES-I data is based on the poverty level index adopted by the Federal Interagency Council in 1969. The index reflects the different consumption requirements of families based on their size, composition, sex, age of the family head, and farm-nonfarm residence (NCHS, 1977b). The HANES "poverty status" variable should not be confused with the HIS "poor-nonpoor" variable, which is based entirely on family income.

Use of medical services

This section on medical services will present data on the patterns of use of services among minority groups but will not address the more complicated issue of the relationship between the use of medical services and the need for medical care. Since data presented in this report indicate deficiencies in the health status of minority groups, these should be considered when interpreting the data on the use of health services.

Physician visits.—During 1976–77, approximately 75 percent of the population had seen a physician within a year. There was little variation by age, race or ethnicity, or family income, ranging only from about 67 percent for low-income black children under 17 years of age to about 85 percent for nonpoor elderly Hispanics (table 2). As would be expected, variation was much less when smaller, more homogeneous income and age categories were compared. For example, among children under 6 years of age, the range in the percent with a physician visit within a year between four income groups and the three racial or ethnic groups was about 10 percentage points (83-93 percent).

Black children reported the fewest number of doctor visits per person per year, regardless of family income (table 2). Nonpoor children made more visits than poor, regardless of race or ethnicity, although the difference was not large. Young and middle-aged poor adults reported more visits than the nonpoor, regardless of race or ethnicity. Young and middle-aged blacks also reported slightly higher levels of physician utilization than whites in the same age groups, regardless of family income.

Place of visit.—As part of HIS, information was also collected on the place of the physician visit, that is, doctor's office, hospital outpatient clinic or emergency room, other places, or telephone call. Although not shown in the detailed tables to this chapter, the data indicate that minority populations used hospital outpatient and emergency rooms much more frequently than the white population. For example, about 1 in 4 visits by blacks were made to outpatient or emergency room facilities, while only about 1 in 8 of the visits by whites occurred at these places. Hispanics used outpatient and emergency room facilities almost as frequently as blacks. Within all these major racial and ethnic groups, the poor used these facilities more often than the nonpoor.

Source of care.—According to the 1974 HIS, minority populations were less likely to have a regular source of medical care than the white population, but the difference was not large (81 percent for whites versus 75 percent for all others). However, among persons who had regular sources of medical care, minority groups were more than 5 times as likely as the white population to use hospital outpatient clinics or emergency rooms for the usual source of care (NCHS, 1978c).

Dentist visits.—The largest differences, both by race or ethnicity and by income, were in the area of dental care (table 2). The poor consistently received less dental care than the nonpoor, as measured by the proportion with one dental visit or more within a year and by the number of visits per person per year. Blacks and Hispanics received considerably less dental care than whites. While more than half (53 percent) of whites reported one visit or more in a year, only one-third of the blacks and one-third of the Hispanics reported a visit. This pattern was found for both the poor and the nonpoor, although the nonpoor within each racial or ethnic group received more dental care. One explanation for the poor-nonpoor differential is that few Federal programs provide dental care. Although many differences between the poor and the nonpoor in the use of physician and hospital services that existed prior to the Medicare and Medicaid programs have disappeared or have been reversed, the income differentials for dental care have remained (Wilson and White, 1977).

Hospital utilization.—There are no clear patterns of hospital utilization between the ethnic and income groups (table 2). Black children were the least likely to be hospitalized, but the number of hospital days per person per year for black children was about the same as for all children, indicating somewhat longer lengths of stay for this group. With the exception of the elderly, the poor were hospitalized more frequently than the nonpoor.

Preventive health services.—The use of preventive health services by minority groups compared with that by the white population presents an interesting pattern. In 1973, there was almost no difference in the proportions of whites and all other races who had the following medical procedures within the past year: electrocardiograms, glaucoma tests, general eye examination, breast exam or pap smear for women, or routine general physical for children (NCHS, 1977e). However, minorities were less likely than whites to have ever had such procedures. If they had ever had the procedures, minorities were more likely than whites to have had them in the past year.

Availability and access.—Availability and access to medical care are factors viewed as potential determinants of health status. Minority groups are often assumed to have less access to or availability of medical care, but the data do not clearly indicate a pattern of differentials in the actual use of physician services. For example, black children showed less use than white children, but black young and middle-aged adults showed the same or more use as whites.

The 1974 HIS contained several questions on access to physician care (NCHS, 1978c). Whites virtually did not differ from blacks and other races in the proportion who reported having problems getting medical care in the past year, about 10 percent for both groups. Only 3.3 percent of the minorities group cited "cost" as a problem, and only 2.1 percent cited "lack of transportation" as a problem in getting medical care. These problems were reported more frequently by minorities than by whites. When asked if they were getting as much medical care as they needed, 5 percent of whites reported they were not, while 11 percent of the blacks and other races reported they were not. Cost and transportation were again the reasons for not getting enough care that minorities reported more frequently than the white population.

Health insurance coverage.—Health insurance coverage is not a direct indicator of health status, but it often indicates accessibility to health services and, therefore, can be a factor influencing health status. Respondents in the Health Interview Survey are asked about their health insurance coverage under both private plans and public plans such as Medicare, Medicaid, and the military health care system. Estimates of coverage under Medicaid are not complete because eligibility is determined by a number of factors that differ from State to State.

In general, a lower proportion of the black population than of the white population had insurance coverage (83.5 percent versus 90.8 percent) (table 1). When comparisons are made within the poor and the nonpoor groups, much of the racial differential in the proportion covered by some form of health insurance disappears. The lowest levels of insurance coverage were among the Hispanic population, particularly among the poor Hispanics. Coverage for the Asian population was similar to that for the white population. Insurance coverage for dental care has been increasing rapidly. Between 1974 and 1976, the increase was 40 percent. The latest figures based on estimates by the Social Security Administration indicate that 24 percent of the population under 65 years of age had some form of dental insurance by the end of 1976. Only 3.3 percent of those 65 years of age and over had dental insurance. No recent national survey data are available on dental coverage by race or ethnicity.

Information on insurance can be misleading for several reasons. First, methodological studies have shown that a number of respondents are not familiar with their insurance coverage status. Second, a number of poor or near-poor who report themselves as not having coverage could well be eligible for Federal programs if the need for medical care arose. However, some people may avoid or postpone seeking medical care if they are not aware of such programs. Finally, these data on insurance coverage do not indicate the adequacy or quality of coverage for those who report that they have private insurance.

Mortality

Of the wide range of indicators that portray the Nation's health, mortality statistics represent a critical component. With respect to minorities, it is especially important to identify the levels, trends, and patterns of deaths that may be considered excessive, preventable, or suggestive of improved public health programs.

Death rates by race

Table D shows both crude death rates and age-adjusted death rates. The latter includes a correction for differences in age distribution between and among the races, differences which can distort comparisons of overall mortality. The age-adjusted death rates are what mortality levels would be if age distributions were identical for each racial group. For 1970, they indicate the following ranking from highest to lowest mortality rates per 1,000 population: black (10.4), American Indian and Alaskan Native (8.2), white (6.8), Chinese-American (4.9), and Japanese-American (3.3). The crude death rate of the American Indian or Alaskan Native population is actually lower than that of the white population, indicating the importance of age adjustment (table D).

Table D. Crude and age-adjusted death rates,[1] according to race: United States, 1970

Race	Crude death rate	Age-adjusted death rate[2]
	Number of deaths per 1,000 resident population	
All races	9.5	7.1
Black	10.0	10.4
White	9.5	6.8
American Indian or Alaskan Native	7.2	8.2
Chinese-American	4.7	4.9
Japanese-American	4.2	3.3
Other races	2.9	3.6

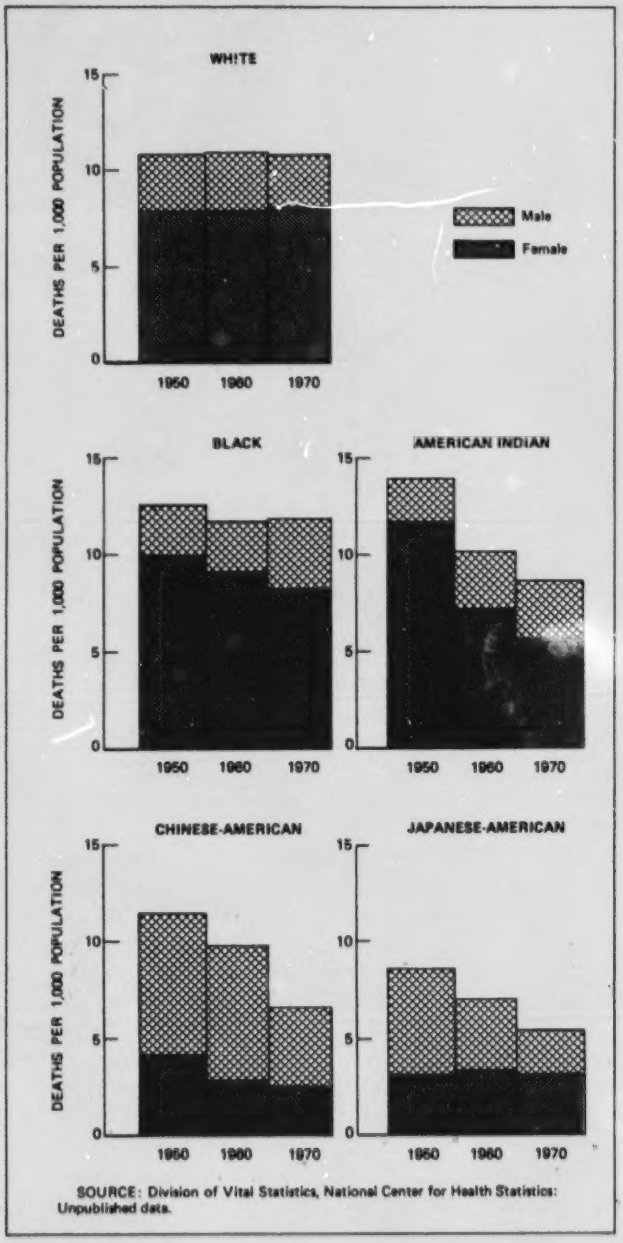
[1] Excludes deaths of nonresidents of the United States.

[2] Age adjusted by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940. Adjustment is based on 11 age groups.

SOURCE: Division of Vital Statistics, National Center for Health Statistics: Selected data.

This ranking of age-adjusted rates for 1970 is like that for 1960 (Kitagawa and Hauser, 1973) with one exception. In 1960, Chinese-American death rates were ranked between the American Indian or Alaskan Native and the white. Trends in death rates between 1950 and 1970 are shown in figure 1. Japanese-Americans have maintained the lowest mortality levels throughout the 20-year period. (Available data indicate that rough age adjustment affects the levels but not so much the trend pattern of the death rates in figure 1. Because of lack of comparable age categories, age-adjusted death rates are not used.)

Racial differences in socioeconomic status may be reflected in the mortality differentials but to what extent is unknown because death rates needed to compare racial-socioeconomic subpopulations are lacking. Indirect evidence on the direction of the relationship is provided by comparing socioeconomic status with mortality level for a few minorities on which data are available. Table C shows that indicators like high family income and individual educational attainment rank racial and ethnic groups in inverse order from the ranking of age-adjusted death rates as shown in table D; that is, Asian minorities have the highest levels of income and education and the lowest death rates, and blacks have the lowest income and education levels and the highest death rates. (Hispanics are excluded from this comparison because of the unavailability of mortality data.) The white population is intermediate on both the socioeconomic indicators and the death rate. Similar findings were reported by Kitagawa and



SOURCE: Division of Vital Statistics, National Center for Health Statistics: Unpublished data.

Figure 1. Death rates, by sex and race: United States, 1950, 1960, and 1970

Hauser (1973) for 1959–61 and by NCHS (1975a) for 1969–71. The NCHS study was limited to white and "all other" comparisons in poverty and nonpoverty areas of 19 large cities. The evidence suggests that an inverse relationship between socioeconomic status and mortality may account for some of the racial differences in mortality. The effects of socioeconomic status apply to age-specific mortality, infant mortality, and mortality from specified causes of death. These topics are presented in the following sections.

Age-specific differentials.—Death rates by age, sex, and specified race for 1970 are displayed in table 3. The age pattern is similar for each racial group. Death rates are high at the youngest ages, decline to a minimum in childhood, and then increase steadily to a maximum at the oldest ages. Males and females have similar age patterns, but death rates for females are consistently below those for males. This sex differential holds for each racial group as well. Death rates are remarkably low for Asian females, that is, Chinese-Americans and Japanese-Americans. The low mortality of the latter group is supported by other studies (Gordon, 1967; Kitagawa and Hauser, 1973).

Compared with the white population, Chinese-American and Japanese-American mortality for both sexes is lower at all ages. Their race-mortality ratios are below 1.00 (table E). Race-mortality ratios above 1.00 indicate the extent to which the death rates of a minority exceed those of the white population. The ratio of 2.00 for the black population under 5 years of age, for example, indicates that this death rate is twice as large as that for the white population under 5 years of age.

The age pattern of race-mortality ratios differs between blacks and American Indians on the one hand and Chinese-American and Japanese-American on the other. Unlike those of the two Asian minorities, ratios for adult blacks and American Indians decrease from 25-34 years of age until, at the oldest ages, they are below 1.00. Discrepancies in age reporting and other statistical errors account for some but not all of the crossover (NCHS, 1968; Rosenwaike, 1979). The pattern appears in other sources of data—in death rates based on Social Security

Table E. Mortality ratios,[1] according to race and age: United States, 1970

Age	Race			
	Black	American Indian	Chinese-American	Japanese-American
	Mortality ratio			
All ages, crude	1.06	0.76	0.50	0.45
All ages, age adjusted	1.54	1.18	0.73	0.49
Under 5 years	2.00	1.67	0.45	0.61
5–14 years	1.42	1.60	0.78	0.65
15–24 years	1.83	2.69	0.45	0.59
25–34 years	2.94	3.48	0.43	0.40
35–44 years	2.72	2.79	0.53	0.46
45–54 years	2.08	1.67	0.59	0.46
55–64 years	1.63	1.00	0.76	0.43
65–74 years	1.35	0.81	0.93	0.43
75–84 years	0 98	0.70	0.80	0.56
85 years and over	0.67	0.56	0.52	0.64

[1] Excludes deaths of nonresidents of the United States.

NOTE: Ratios are computed by dividing the age-specific death rate of a specified racial or ethnic group by the death rates of the white population in that age group.

SOURCE: National Center for Health Statistics: Data computed by the Division of Analysis from data compiled by the Division of Vital Statistics.

Administration records, for example—and remains unexplained.

Age-specific estimates of the black and white populations for intercensal years permit calculation of death rates and examinations of how the age patterns of race-mortality differentials may have changed since the last decennial census. The ratios of black to white death rates by age in table F indicate stability in the basic age pattern of the race differential since 1950. The noticeable changes are some slight decreases in the race-mortality ratios for those under 65 years of age. The largest differential remains at 25–44 years of age, for which the 1977 death rate for the black population was 2.4 times that for the white population. Some of this differential may be viewed as excess mortality that could be prevented.

Infant deaths.—Infant mortality rates have frequently been used as a comparative health indicator of different populations. It is an indicator that can be modified over a relatively short period through interventions in the health care sector as well as by improvements in general socioeconomic conditions. Data on infant mortality rates, that is, deaths occurring under 1 year of age per 1,000 live births, have been available for a number of years by specific racial group. Infant mortality is a critical component of total mortality that is often large enough to affect life expectancy. (Race differentials in life expectancy are examined in a later section of this chapter.)

Japanese-Americans and Chinese-Americans have the lowest infant mortality rates. These rates may be artificially low because of lack of comparability in racial classification between birth and death certificates. Comparability between birth and death certificate reporting of race is a problem of unknown magnitude. The race of a newborn child is classified according to the race of the parents as reported on the birth certificate. The race of a deceased infant is that reported on the death certificate. The race of the infant determined for birth statistics purposes may not be the same as that reported for the infant on the death certificate. This is especially true when there is racially mixed parentage. Although this may explain part of the racial differential, other evidence still indicates that Japanese-American and Chinese-American infant mortality is comparatively low. Table G shows that the 1977 infant mortality rates for these groups (6.6 and 5.9, respectively, per 1,000 live births) were half that of the white population (12.3). The black infant mortality rate was the highest, 23.6 per 1,000 live births in 1977. The rate for American Indians was between the white rate and the black rate.

Infant mortality rates have generally been declining; in 1950, the total infant mortality rate was 29.2 per 1,000 live births, compared with 14.1 in 1977. While declines have occurred for all races, racial groups differ in the amount of decline. The most remarkable drop occurred for the American Indian population, with a decline from 82.1 deaths per 1,000 live births in 1950 to 15.6 in 1977. The decline among Japanese-Americans and Chinese-Americans has been almost as great proportionally, but from much lower starting points.

The comparisons between the white and black rates present some interesting trends in the decline of infant mortality rates. In 1950, the black rate was 64 percent higher than the white rate (43.9 versus 26.8). While both rates declined during the past two decades, the white rate dropped more. By 1977, the black rate was almost twice the white rate (23.6 versus 12.3), although the black rate had declined by almost 50 percent. The gap between white and black infant mortality rates has actually increased during the past 27 years.

Declines in infant mortality have been attributed to a number of changes in recent years, as follows:

- More women are receiving prenatal care in early pregnancy.
- The proportion of high-risk births is decreasing.
- Advanced techniques are being used in medical science, especially in neonatology.
- The most modern care is becoming available through regional perinatal centers.
- Contraceptive utilization is improving, thereby permitting women to time and space their pregnancies more effectively and reducing the proportion of high risk births as a result.
- Legal abortion services are increasing.
- Programs are becoming available to improve the nutrition of pregnant women and infants.
- Socioeconomic conditions are generally improving.

The impact of these changes has been greater for whites than for minority groups, which also explains the increas-

Table F. Black/white mortality ratios, according to age: United States, selected years 1950–77

Year	Age			
	Under 25 years	*25–44 years*	*45–64 years*	*65 years and over*
	Mortality ratio			
1950	1.88	2.82	1.93	0.94
1960	2.05	2.58	1.83	1.00
1965	2.13	2.60	1.81	0.98
1970[1]	1.93	2.70	1.78	1.02
1971[1]	2.00	2.79	1.73	1.01
1972[1]	1.85	2.74	1.76	1.02
1973[1]	1.77	2.72	1.76	1.04
1974[1]	1.75	2.71	1.74	1.03
1975[1]	1.75	2.53	1.69	1.03
1976[1]	1.82	2.50	1.72	1.02
1977[1]	1.73	2.44	1.72	1.03

[1] Excludes deaths of nonresidents of the United States.

NOTE: Ratios are computed by dividing the age-specific death rate of the black population by that of the white population in the same age group.

SOURCE: National Center for Health Statistics: Data computed by the Division of Analysis from data compiled by the Division of Vital Statistics.

Table G. Infant, neonatal, and postneonatal mortality rates, according to race: United States, selected years 1950-77

Mortality rate and year	Race				
	Black	American Indian	Chinese-American	Japanese-American	White
	Number of deaths per 1,000 live births				
Infant mortality rate[1]					
1950	43.9	82.1	19.3	19.1	26.8
1960	44.3	49.3	14.7	15.3	22.9
1970[2]	32.6	22.0	8.4	10.6	17.8
1977[2]	23.6	15.6	5.9	6.6	12.3
Neonatal mortality rate[3]					
1970[2]	22.8	10.6	5.4	8.4	13.8
1977[2]	16.1	8.3	4.2	5.1	8.7
Postneonatal mortality rate[4]					
1970[2]	9.9	11.4	3.1	2.2	4.0
1977[2]	7.6	7.3	1.7	1.5	3.6

[1] Infant mortality rate is the number of deaths for infants under 1 year of age per 1,000 live births.

[2] Excludes deaths of nonresidents of the United States.

[3] Neonatal mortality rate is the number of deaths for infants within 28 days of birth per 1,000 live births.

[4] Postneonatal mortality rate is the number of deaths for infants within 28 days to 365 days of birth per 1,000 live births.

SOURCE: Division of Vital Statistics, National Center for Health Statistics: Selected data.

ing differential between the black and white infant mortality rates. Compared with white births, a greater proportion of the black births still occurs to women in high-risk categories based on the age of the mother and the number of children born to the mother (NCHS, 1973b). From 1964 to 1974, 30 percent of the decline in the death rate for white infants resulted from fewer births to mothers in these high-risk categories, but only 19 percent of the decline in the death rate for black infants can be attributed to this (Kovar, 1977). Black women also obtain initial prenatal care somewhat later in pregnancy than white women (NCHS, 1978d).

Cause of death: Black and white differentials[5]

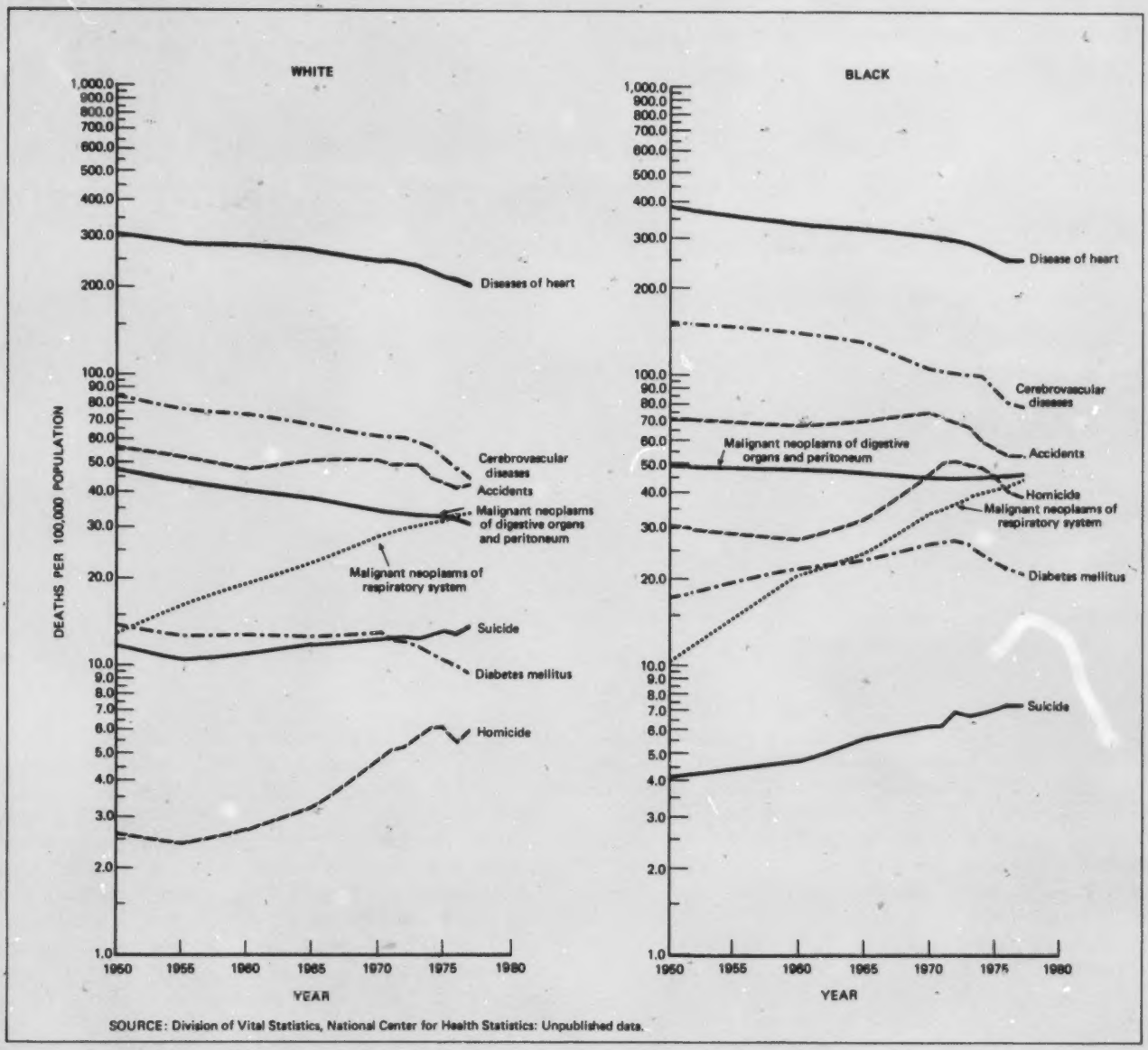
The presentation of comparative data on causes of death by specific racial groups is difficult because of the relatively small number of deaths in most categories. The annual *Vital Statistics of the United States,* Volume II, however, contains data on the number of deaths by cause for the racial and ethnic groups shown in table D. Death *rates* are not shown in those volumes because adequate denominator data are lacking, although special tables are planned showing race-specific cause of death rates for the 3 years surrounding the 1980 census (1979–1981). The cause of death comparisons between the white and black populations reported here are limited to a few selected causes with sufficiently large numbers of deaths.

Figure 2 depicts the trend in death rates between 1950 and 1977 for eight causes shown separately for the black and white populations. The corresponding numerical values of these rates are shown in table 4, which also includes major cardiovascular diseases and malignant neoplasms (cancer)—broad categories representing the two leading causes of death.

Major cardiovascular diseases (ICDA Nos. 390–448).—This group of circulatory diseases accounted for 51 percent of deaths in the total population during 1977. By race, the corresponding percents were 52 for the white population and 42 for the black population. Age-adjusted death rates for cardiovascular diseases have decreased markedly during the past 27 years, especially during the most recent years. These declines have occurred for both whites and blacks (table 4). The age-adjusted race mortality ratios declined slightly for major cardiovascular diseases between 1950 and 1977—from 1.39 to 1.33 (table H).[6] Race mortality ratios for cardiovascular diseases declined because of a more rapid decline in the death rate for blacks compared with that for whites (table 4). The trends in age-adjusted death rates for the two major com-

[5] Cause of death categories and code numbers are based on the *Eighth Revision International Classification of Diseases, Adapted for Use in the United States* (ICDA).

[6] The ratio of 1.39 for 1950 indicates that the age-adjusted mortality rate for the black population was 1.39 times that for the white population. Ratios decreasing toward 1.0 indicate a convergence of mortality rates for the black and white populations, and ratios increasing from 1.0 indicate a divergence of rates.



SOURCE: Division of Vital Statistics, National Center for Health Statistics: Unpublished data.

Figure 2. Age-adjusted death rates for selected causes of death, by race: United States, selected years 1950-77

ponents of these cardiovascular diseases—diseases of heart and cerebrovascular diseases—are shown in figure 2. For both of these components, the ratio of the age-adjusted death rate for the black population to the corresponding rate for the white population declined slowly between 1950 and 1977—from 1.27 to 1.24 for diseases of heart and from 1.81 to 1.75 for cerebrovascular diseases (table H). The persistently higher mortality rates among the black population for both components of the major cardiovascular diseases category can be attributed, in part, to the fact that the prevalence of hypertensive disease among black adults is nearly twice that among white adults. (See "Health status indicators.")

Malignant neoplasms (ICDA Nos. 140–209).—Unlike the declining rates of cardiovascular diseases, death rates for malignant neoplasms have increased. The age-adjusted death rate for malignant neoplasms for all sites combined rose more rapidly for the black population than for the white population between 1950 and 1977 (table 4). This is reflected in an increase in the mortality ratio, which rose from 1.04 for 1950 to 1.31 for 1977 (table H). Age-adjusted death rates for two major components of these neoplasms—those of the digestive organs and peritoneum and those of the respiratory system—show two contrasting patterns, a decline in the rate for neoplasms of the digestive system and peritoneum for both races, particularly among whites, and a drastic increase in neoplasms of the respiratory system for both races, particularly among blacks (table 4 and figure 2). For both of these components, the ratio of the age-adjusted death rate for the black population to the corresponding rate for the white population increased substantially between 1950 and 1977.

Table H. Black/white mortality ratios for selected causes of death: United States, selected years 1950–77

Cause of death (ICDA code)[1]	Year				
	1950	1960	1965	1970[2]	1977[2]
	Mortality ratios				
Major cardiovascular diseases (390–448)	1.39	1.35	1.35	1.36	1.33
Diseases of the heart (390–398, 402, 404, 410–429)	1.27	1.19	1.20	1.23	1.24
Cerebrovascular diseases (430–438)	1.81	1.89	1.96	1.85	1.75
Malignant neoplasms (140–209)	1.04	1.15	1.17	1.23	1.31
Digestive organs and peritoneum (150–159)	1.05	1.20	1.28	1.32	1.44
Respiratory system (160–163)	0.80	1.06	1.07	1.20	1.32
Diabetes mellitus (250)	1.24	1.72	1.86	2.05	2.21
Accidents (E800–E949)	1.28	1.39	1.37	1.46	1.27
Suicide (E950–E959)	0.36	0.42	0.47	0.49	0.54
Homicide (E960–E978)	11.73	10.15	10.03	9.81	6.58

[1] Because of decennial revisions of the International List of Causes of Death and changes in rules of cause-of-death selection, there is lack of comparability to a varying degree for some causes from one revision to the next. The beginning dates of the revision are 1949, 1958, and 1968. The cause-of-death titles are based on the *Eighth Revision International Classification of Diseases, Adapted for Use in the United States* (ICDA).

[2] Excludes deaths of nonresidents of the United States.

NOTE: Ratios are computed by dividing the age-adjusted death rate of the black population by the age-adjusted rate of the white population for the selected cause-of-death category. Age adjustment is computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940. Adjustment is based on 11 age groups.

SOURCE: National Center for Health Statistics: Data computed by the Division of Analysis from data compiled by the Division of Vital Statistics.

It went from 1.05 to 1.44 for malignant neoplasms of the digestive organs and peritoneum and from 0.80 to 1.32 for malignant neoplasms of the respiratory system (table H). Racial difference in cigarette smoking patterns and increased exposure to carcinogenic hazards of urban-industrial environments as a result of racial differences in migration are being investigated as possible explanations of these trends.

Diabetes mellitus (ICDA No. 250).—Among the black population, diabetes is a prevalent disease for which mortality has only recently declined following a long-term rise (table 4 and figure 2). The age-adjusted death rate for diabetes mellitus for the white population remained relatively stable during the 1950's and 1960's and then declined during the 1970's. The corresponding rate for the black population, however, rose steadily during the 1950's and 1960's and then slightly declined only after 1972. The ratio of the age-adjusted death rate for this cause for the black population to that for the white population increased from 1.24 for 1950 to 2.25 for 1973, dropped to 2.17 for 1974, and then rose again to 2.21 for 1977 (table H).

Accidents (ICDA Nos. E800–E949).—The age-adjusted death rate for accidents for the black population increased from 70.9 deaths per 100,000 population in 1950 to 74.4 in 1970. Since then, this rate has been declining. It dropped to 53.9 deaths per 100,000 for 1977, compared with 42.5 for whites in that year. The trend for blacks represents a rate of decline that exceeds that for the white population (table 4). During the 1970's, therefore, the race-mortality ratios for accidents declined—from 1.46 for 1970 to 1.27 for 1977 (table H).

Homicide (ICDA Nos. E960–E978).—The age-adjusted death rate for homicide for the black population increased from 30.5 deaths per 100,000 for 1950 to 51.5 for 1972. Since that year, this rate has declined, reaching 38.8 deaths per 100,000 for 1977. The age-adjusted death rate for homicide for the white population was 2.7 per 100,000 for 1960. Between 1960 and 1975, this rate more than doubled, reaching 6.1 per 100,000 for 1975. The rate then dropped to 5.9 per 100,000 for 1977 (table 4). The ratio of the age-adjusted death rate for homicide for the black population to that for the white population declined during 1960–77—from 10.15 to 6.58 (table H). Thus, the homicide death rate for blacks is still more than 6 times that for the white population.

Suicide (ICDA Nos. E950–E959).—Suicide is the only one of the eight causes for which the white population has higher death rates than the black population, but this race differential has been decreasing since 1950. Between 1950 and 1977, the age-adjusted suicide rate for the black population increased from 4.2 per 100,000 to 7.3, while the rate for the white population only increased from 11.6 to 13.6 (table 4). The larger rate of increase for blacks is reflected in a rise in the race mortality ratio for suicide from 0.36 in 1950 to 0.54 in 1977 (table H).

Life expectancy

A life table translates race differentials in annual death rates into implications for comparative survival and length of life. The average duration of life is measured by the expectation of life at birth. For specific races other than white, official life tables are available only for the black

population for 1969–71 (the 3-year period that included the last decennial census). For that period, life expectancy at birth for the black population was 64.1 years, or 7.5 years less than the 71.6 years for the white population. The racial difference was slightly larger for males than for females. For black males, the expectation of life at birth (60 years) was 7.9 below that for white males; for black females, the expectation of life at birth (68.3 years) was 7.2 years below that for white females (NCHS, 1975b).

Table 9 in Part B of this report shows trends of life expectancy at birth and at 65 years of age by color and sex for selected years from 1900 to 1977. All sex-color groups show gains in life expectancy. In general, these gains were smallest for white males and largest for all females other than white.

Another approach to comparative longevity is to measure the percent of persons of a birth cohort surviving to a specified age. Trends in the percent surviving to 20, 45, and 65 years of age are shown in table J. Based on 1977 mortality, the difference between whites and all others is within 2 percentage points at 20 years of age, but it increases with age. For example, the percent surviving to 65 years of age, is 70.7 for white males but only 55.8 for all other males. This represents very little change since 1919–21 in the difference by color, although the percent surviving has increased substantially during the 57-year period for both color groups.

American Indians and Alaskan Natives

American Indians and Alaskan Natives have a unique legal-historical relationship with the Federal Government. This relationship, unlike that of any other group of American citizens, is based on treaties and on laws passed by Congress. The Department of Health, Education, and Welfare carries out its unique health responsibilities to Indians and Alaskan Natives primarily through the Indian Health Service (IHS). IHS has the primary responsibility for health care of American Indians and Alaskan Natives

Table J. Percent surviving to 20, 45, and 65 years of age, according to sex and color: United States, 1900–1902 to 1977

Age, sex, and color	*Year*					
	1900–1902[1]	*1919–21*[1]	*1939–41*	*1959–61*[2]	*1969–71*[2,3]	*1977*[2,3]
	Number of survivors per 100 born alive					
20 YEARS						
Male						
White	76.4	85.0	92.3	95.9	96.5	97.2
All other	56.7	79.1	86.8	93.1	94.3	96.0
Female						
White	79.0	87.3	94.0	97.1	97.6	98.2
All other	59.1	80.2	88.5	94.7	95.9	97.1
45 YEARS						
Male						
White	61.4	72.7	84.3	90.5	90.7	92.1
All other	39.2	56.6	[illegible]	82.1	80.2	85.0
Female						
White	64.7	74.9	87.9	94.2	94.6	95.7
All other	42.3	56.2	71.1	86.8	88.6	92.1
65 YEARS						
Male						
White	39.2	50.7	58.3	65.8	66.3	70.7
All other	19.0	34.0	35.9	51.4	49.6	55.8
Female						
White	43.8	54.3	68.7	80.7	81.6	83.8
All other	22.0	31.0	40.7	60.8	66.1	72.7

[1] Data are for groups of registration States as follows: 1900–1902, 10 States and the District of Columbia; 1919–21, 34 States and the District of Columbia. Figures for "all other, male" and "all other, female" include only the black population. However, in no case did the black population comprise less than 95 percent of the corresponding "all other" population.

[2] Alaska and Hawaii included beginning in 1959.

[3] Excludes deaths of nonresidents of the United States.

SOURCES: National Center for Health Statistics: *Vital Statistics of the United States, 1975*, Vol. II, Part A. DHEW Pub. No. (PHS) 79-1114. Public Health Service. Washington. U.S. Government Printing Office, 1979; Final Mortality Statistics, 1977. *Monthly Vital Statistics Report*, Vol. 28, No. 1, supplement. DHEW Pub. No. (PHS) 79-1120. Public Health Service. Hyattsville, Md. May 11, 1979.

who live on or near Federal reservations, in traditionally Indian country in Oklahoma and Alaska, and in other places such as certain urban areas.

The IHS mission is to assure that a comprehensive health service delivery system is accessible and available to Indians and Alaskan Natives and to provide them with opportunities for maximum involvement in defining and meeting their own health needs. The data presented in this section have been derived from reports of the Indian Health Service, and they are applicable only to those persons served by IHS (Indian Health Service, 1979). (Vital event data are furnished annually to IHS by NCHS.)

A number of health improvements have been realized by American Indians and Alaskan Natives since 1955. Tremendous strides have also been made in correcting environmental deficiences and providing water and sewage disposal facilities for thousands of families. The health status of American Indians and Alaskan Natives, however, still lags 15–20 years behind that of the general population. To help rectify this situation, the Indian Health Service is working with American Indians and Alaskan Natives to provide more preventive medicine and expanded curative services.

The beneficial effect of improved facilities and services is evident in the reduction of various diseases. Tremendous headway has been made in maternal and child health since 1955. An American Indian child born in 1970 had a life expectancy of 65.1 years, an increase of 5.1 years from 1950. The life expectancy of a white child, however, was 69 years in 1950 and 71.6 years in 1970. Infant mortality for American Indians and Alaskan Natives has been reduced by 74 percent, and maternal mortality has been reduced by 91 percent. In 1955, their infant mortality rate was 2.4 times more than the total U S. rate, but in recent years it has been 1.2 times the U.S. rate. Neonatal (under 28 days) and postneonatal (28 days through 11 months) rates have declined 63 and 82 percent, respectively, since 1955. These significant decreases primarily result from increased emphasis on and availability of maternal and child health services to American Indians in the home, community, and IHS health facilities, coupled with improvements in the home environment, such as a safe water supply, proper sewage disposal, and other related factors. The 3-year average maternal mortality rate was 2.2 times the total U.S. rate two decades ago (1958), but by 1975 and 1976 it was actually lower than the U.S. rate.

Tuberculosis was once the great scourge of American Indians and Alaskan Natives. This disease, which accounted for 55 deaths per 100,000 population in 1955, now accounts for 6.1 deaths per 100,000 population, a reduction of approximately 89 percent. The rate of new cases of tuberculosis for this group was 8 per 1,000 in 1955; the rate is now less than 1 per 1,000. During the same period, the death rates dropped 65 percent for influenza and pneumonia, 72 percent for certain diseases of early infancy, and 89 percent for gastroenteritis.

The age-adjusted death rate for accidents continues to be considerably higher for the group of American Indians and Alaskan Natives than for the total U.S. population (155.5 per 100,000 versus 44.7 in 1977). The accident death rates for American Indians 25–54 years of age were almost 5 times that for the total U.S. population of comparative ages. The homicide and suicide death rates were also higher; the age-adjusted homicide rate was 2.6 times more than the total provisional rate in 1977; and the suicide rate was 2.2 times as high. The suicide rates were higher only for those American Indians and Alaskan Natives under 45 years of age, with the greatest differentials occurring in the group 15–24 years of age.

One of the most serious health problems facing American Indians and Alaskan Natives is alcoholism. During the past decade, their alcoholism death rates were from 4.3 to 5.6 times as high as the rates for the total population.

Several specific illnesses have been identified by IHS as special health problems for Indians and Alaskan Natives. One is otitis media or inflammation of the middle ear, which primarily affects young children and can result in serious hearing disabilities. The rate of new cases reported for this condition increased markedly during the 1960's but recently declined somewhat. In 1962, when the disease was first reported, the rate was 3,802 per 100,000 population. It continued to increase to a high of 12,290 per 100,000 in 1972. Since then, the rate has been declining. It was about 9,658 per 100,000 in 1978. A number of factors contributed to the increase and decrease in these rates. First, otitis media was out of control and rampant. This then sparked a concentrated effort on the part of IHS to report, treat, control, and diminish the frequency of this disease. Health care was made more accessible and available through a variety of means; through health education, American Indians and Alaskan Natives were made aware of the need to seek health care for ear conditions.

Data on the use of health care resources by American Indians and Alaskan Natives relate to the number of admissions, visits, and services at IHS and contract facilities. They indicate a marked increase in use of IHS facilities between 1955 and 1978. For example, hospital admissions were 2.2 times higher in 1978 than in 1955, visits to outpatient facilities increased more than sevenfold, and dental services increased more than sixfold.

Increased utilization can be attributed to a number of factors. Health services have been improved. Modern health practices are more accepted by American Indians and Alaskan Natives, in sharp contrast to two decades ago when there was widespread reluctance to use limited IHS services. Since that time, the staff has expanded from a small core to a multidisciplined team of health professionals. Twenty-five hospitals were or will be constructed as new or replacement facilities by 1980. Many new health centers have been built in more convenient locations, and many small health stations were replaced by larger centers.

In the near future, it will be possible to make estimates of certain health characteristics of the American Indian population by combining several years of data from the Health Interview Survey. (Although American Indians and

Alaskan Natives were identified in the 1976 and 1977 HIS, reporting problems preclude the use of these data in this report. The first available estimates for this minority group will be based on 1978–1979 data.) In addition, the 1980 census will contain a special series of questions, including health-related items, for American Indians and Alaskan Natives.

Summary

This chapter has presented available national data on the health status of selected racial and ethnic minorities. Findings are based on mortality data from the national vital registration system and on health status and health care data from the Health and Nutrition Examination Survey (HANES-I) and the Health Interview Survey (HIS). HIS data for 1976–77 represent a new source of minority health information, much of which is presented here for the first time. Most estimates for American Indians and Alaskan Natives are based on data provided by the Indian Health Service.

Compared with whites, mortality is much higher for blacks and American Indians, especially for those in the younger and middle years of life. Violent causes of death (accidents and homicide) are especially high for blacks and American Indians. Infant mortality is significantly higher for these minority populations than for the white population. Evidence suggests that differing income distributions may account for part of the race differentials in mortality and infant mortality, differentials that persist despite significant declines in mortality during the past 25 years. However, for Asian Americans mortality is below the national average. Of all minority groups for which data are available, Japanese-American females have the lowest death rate.

A considerably larger proportion of the black population than the white perceive their own health to be "fair" or "poor." Minority children clearly use fewer health services than do white children, but there is no clear pattern of differences among adults. One of the most striking differences between minority populations and the white population is in dental care, with the minorities receiving considerably less dental care, both among the poor and the nonpoor. In addition, while the gaps that existed between the poor and the nonpoor in physician and hospital care have generally been closed over the past decade, they still remain for dental care.

Compared with the white majority, minorities are less likely to have a regular source of medical care, and those who do have a regular source more frequently use hospital outpatient clinics and emergency rooms. The same proportions of the majority and minorities report problems in getting medical care, although a larger proportion of the minorities report not getting as much medical care as they need.

In general, these data on the health status of minority populations indicate considerable differences in mortality and morbidity when compared to the white population. Differences in other health status indicators and in utilization of health services are not always as obvious. Some of these differences can be attributed to socioeconomic factors, and many of the others may result from learned patterns of seeking health care.

Much of the data presented are from surveys. Although the samples were relatively large, such surveys do not identify specific small areas where health status and use of medical care are far below national averages or standards, nor can they always identify small subgroups of minority populations with a particular health problem. However, additional analyses of available data and combining several years of current and future data will greatly add to an understanding of the health status of minority groups.

Technical note

Sources of data

Primary sources of information for this chapter are the various data bases of the National Center for Health Statistics (NCHS), including the vital statistics data on mortality and natality, information collected in the Health Interview Survey (HIS), and information gathered in the Health and Nutrition Examination Survey (HANES). Most of the information is derived from existing or forthcoming Center publications (NCHS, 1979b). HIS data are collected from a probability sample of about 40,000 households each year, through interviews conducted for NCHS by the U.S. Bureau of the Census. Information is obtained on a wide range of health characteristics, including incidence of acute illness, prevalence of selected chronic illnesses, associated disability, use of medical services, and other health-related topics (NCHS, 1978e; NCHS, 1978f). HANES data are based on a national probability sample of about 20,000 people who were examined in a highly controlled clinical setting. Information was obtained on selected conditions, both known and previously undiagnosed, as well as on a variety of physical, physiological, and psychological measures (NCHS, 1973a). Both of these surveys were designed to represent the civilian noninstitutionalized population of the United States. A more detailed description of these two surveys can be found in Appendix I of this report.

Definition and classification of race and ethnicity

Comparative analysis of health data for minority or ethnic groups is complicated by the diversity of definitions of these groups, both conceptual and operational. In the past, the population-based surveys of NCHS—for example, the Health Interview Survey and the Health Examination Survey—as well as many of the surveys conducted by the Bureau of the Census relied an interviewer observation to determine race. Frequently, all members of the household

were assigned the same racial category as the respondent. Respondents were assigned to 1 of 3 racial groups, white, black, or other. However, most of the published data from the Center were restricted to two categories, either "white" and "all other" or "white" and "black" (with the "all other" included in the total). The "other races" category is frequently too small to analyze as a separate group, and it includes groups of people with widely differing health characteristics, resulting in an analytic variable of only minimal value. Racial and ethnic data from surveys of records—such as the Hospital Discharge Survey, National Ambulatory Medical Care Survey, and to some extent even vital records—are based on the observation of the person who completed the records.

In an effort to provide for a standard classification for recordkeeping, collection, and presentation of data on race and ethnicity, the Office of Management and Budget issued a directive requiring the use of five standard categories: American Indian or Alaskan Native, Asian or Pacific Islander, black (not of Hispanic origin), Hispanic, and white (not of Hispanic origin). Questions pertaining to these recommended categories were subsequently added to most Federal surveys, including those of NCHS. These questions permit respondents to classify themseleves into 1 of the 5 racial and ethnic groups, although some studies continue to use Spanish surnames as an indicator of the Hispanic population.

While standard analytic categories were prescribed by the Office of Management and Budget and later by the Office of Federal Statistical Policies and Standards, the questions used in the various surveys are not yet standardized. This anomaly results in some degree of noncomparability between data from surveys, at least in terms of the estimated number of people in each ethnic group. On the other hand, some differences in ethnic classification between different surveys may not substantially affect the description of the overall health characteristics of the minority groups. A more serious impact of the use of the classification of respondents of their race or ethnicity by self-identification is the possible changes over time in a person's identity with an ethnic group. For example, people who now identify themselves as Hispanic may not identify themselves as such in the future. This will severely hamper long-term trend analysis, both cross-sectional and cohort analysis, of the health characteristics of certain minority groups.

The questions used to collect information on Hispanic origin frequently include the identification of subgroups of the Hispanic minority, that is, Cuban, Chicano, Mexican-American, and Puerto Rican. However, the relatively small size of these subgroups precludes detailed analysis of their health characteristics. Such analysis will be possible in the near future when data from several years of the Health Interview Survey are aggregated so that there are enough sample cases to analyze specific subgroups of the Hispanic population. However, this type of analysis precludes measurement of short-term changes in health characteristics. Eventually, the same type of analysis will be possible for the Asian or Pacific Islander and American Indian or Alaskan Native subgroups.

Since 1900, information about the "color or race" of the decedent has been requested on death certificates. For the most part, national statistics have been tabulated by color (white and all other). The number of tabulations by specified race is limited, but Negro (black) has been included in a table published annually since 1950, which shows data by age, sex, and detailed causes of death. Population data available from the last decennial census permit calculation of death rates for specific races for 1970 but not for more recent years.

The problems of different racial and ethnic definitions are compounded when it is necessary to combine data from two different sources. This is the case with mortality statistics because the numerators for a death rate are derived from one data base (vital statistics) and the denominator is derived from another data base (population census or survey). Vital event data are collected annually, while annual population data by age and sex for denominators are available from the Bureau of the Census only for white, black, all other races, and the Hispanic population. Population data on other racial and ethnic groups are available only for years in which the decennial census is conducted. The proposed mid-decade census will help solve this problem as will improved methods of projecting population changes between enumeration periods.

Even when such data are available, there are problems of comparability between race and ethnicity reporting on census data and on vital records. In the case of infant mortality rates, comparability between death and birth certificate definitions of race creates an additional problem. On the birth certificate, the combination of parents' races determines race, while on the death certificate race is solely determined by that of the decedent.

Occasionally, it is possible to correct for some of the errors arising from the foregoing problems in death rates by race. Matching the death records with the census record, for example, enabled Kitagawa and Hauser (1973) to correct death rates for race misclassification. Corrections did not change the relative standing of mortality of the racial groups, but they did tend to enlarge the difference from white mortality for 1960. In the absence of matched vital and census records, no sound basis exists for the correction of death rates by race. Therefore, observed rates presented here may contain a large error component. If these errors are in the direction of those reported by Kitagawa and Hauser, the death rates reported here may be assumed to understate true race differentials in mortality.

Death rates for the Hispanic and American Indian populations present special problems. Historically, no method for identifying persons of Hispanic origin from the death certificate has existed. In response to the growing interest in and need for mortality data on the Hispanic population, some States have added an item to their death certificates to identify such persons. Data on the *number* of deaths for 1978 will be published for some 18 reporting

States, accounting for approximately 60 percent of the Hispanic population in the U.S. Whether it will be possible to publish mortality *rates* for the Hispanic population will depend on the evaluation of the adequacy of intercensal estimates of the Hispanic populations for those States.

Vital event data are furnished annually to the Indian Health Service (IHS) by NCHS under a contract arrangement. Indian Health Service mortality estimates pertain to residents of 25 States in which IHS has responsibilities. The IHS has developed a methodology for making population estimates and projections for American Indians and Alaskan Natives. U.S. Bureau of the Census 1970 population counts are updated each year, using American Indian and Alaskan Native natural increases (births minus deaths) by county and total migration data for the county to derive current and projected national and State population estimates.

Additional data sources

In recent years, NCHS has collected a wide range of data relating to minority health status, some of which have been presented in this chapter. However, NCHS cannot completely utilize these data because of present resource limitations and priorities. Other researchers may obtain these data through the public-use data tape program (NCHS, 1978g). For example, since 1969, the public-use mortality tapes have contained the following racial identifications: white, black, American Indian, Chinese, Japanese, Filipino, Hawaiian, other Asian or Pacific Islander, and other races. While these racial categories are identified, comparative analysis is restricted by the relatively small cell sizes and the lack of adequate denominator population data, as described above. As more detailed questions on ethnic identity are added to the NCHS population-based surveys, the data will also be added to the public-use tapes. The 1976 HIS public-use tapes contained ethnic data for the first time.

The 1980 decennial census will contain detailed questions on race and ethnic origin, and this will permit the calculation of new detailed vital rates. In addition, the decennial census contains several questions on disability status for adults, and this also should prove to be a valuable source of information. It can be expected that the race and ethnicity questions on the decennial census will result in a better understanding of how to ask such questions and will lead to more standardized race and ethnicity questions in other surveys.

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Table 1. Selected health characteristics, according to income, age, and race or ethnicity: United States, average annual 1976–77

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Income, age, and race or ethnicity	Population in thousands	Persons with—			Restricted-activity days[2]	Bed days[3]
		Self-assessed health status as fair or poor	Limitation of activity	Some form of health insurance[1]		
		Percent of population			Number per person per year	
ALL INCOMES[4]						
All ages						
Total	211,400	12.3	13.9	88.6	18.0	7.0
Black	23,066	19.1	14.6	83.5	20.7	8.9
Hispanic	11,913	12.8	9.1	75.7	16.7	7.8
White	160,129	11.0	14.0	90.8	17.6	6.6
Under 17 years						
Total	60,399	4.2	3.5	87.9	11.1	5.2
Black	7,992	7.5	3.5	83.3	8.5	4.4
Hispanic	4,854	6.0	3.0	76.4	12.5	6.8
White	42,740	3.3	3.6	90.8	11.3	5.1
17-44 years						
Total	85,662	8.4	8.5	85.8	14.2	5.5
Black	9,373	16.1	9.7	81.2	18.6	8.3
Hispanic	4,957	12.1	7.4	72.4	14.7	6.9
White	64,281	6.6	8.2	88.1	13.4	4.9
45-64 years						
Total	43,306	22.1	23.7	90.2	24.9	8.6
Black	3,893	38.4	31.0	83.8	37.3	14.5
Hispanic	1,597	28.3	22.3	77.3	27.7	10.4
White	34,999	19.3	22.6	92.0	23.0	7.6
65 years and over						
Total	22,033	30.6	44.2	97.9	38.2	14.8
Black	1,807	44.1	54.3	95.5	49.5	19.4
Hispanic	505	36.5	43.2	95.7	42.2	19.2
White	18,109	28.3	42.6	98.4	36.5	14.0

See footnotes at end of table.

Table 1. Selected health characteristics, according to income, age, and race or ethnicity: United States, average annual 1976–77—Continued

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Income, age, and race or ethnicity	Population in thousands	Persons with--			Restricted-activity days[2]	Bed days[3]
		Self-assessed health status as fair or poor	Limitation of activity	Some form of health insurance[1]		
LESS THAN $10,000		Percent of population			Number per person per year	
All ages						
Total	68,268	20.4	21.8	80.3	25.6	10.0
Black	11,961	23.5	19.2	79.3	25.1	10.5
Hispanic	5,681	17.2	12.0	66.2	21.3	9.9
White	44,555	19.5	23.8	82.9	26.2	9.8
Under 17 years						
Total	17,848	6.8	4.3	76.8	11.9	5.9
Black	4,363	9.0	4.1	78.2	8.7	4.6
Hispanic	2,278	8.2	3.6	65.9	14.0	7.6
White	9,458	5.6	4.6	79.3	12.8	6.1
17-44 years						
Total	24,769	13.8	12.0	73.1	18.8	7.3
Black	4,386	20.6	13.2	75.4	22.4	10.0
Hispanic	2,307	16.5	9.5	61.7	18.2	8.4
White	15,693	10.9	11.9	74.7	17.5	6.4
45-64 years						
Total	12,015	38.5	38.8	80.4	41.2	15.0
Black	1,875	47.6	40.9	79.5	49.6	18.4
Hispanic	746	38.1	31.2	65.3	43.0	16.2
White	8,418	35.4	38.3	82.2	38.4	14.0
65 years and over						
Total	13,637	34.1	47.8	98.6	42.3	15.7
Black	1,336	46.6	57.6	96.1	53.5	20.3
Hispanic	350	35.4	42.3	96.8	42.1	22.0
White	10,986	31.6	46.0	99.0	40.7	14.8

See footnotes at end of table.

Table 1. Selected health characteristics, according to income, age, and race or ethnicity: United States, average annual 1976-77—Continued

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Income, age, and race or ethnicity	Population in thousands	Persons with—			Restricted-activity days[2]	Bed days[3]
		Self-assessed health status as fair or poor	Limitation of activity	Some form of health insurance[1]		
		Percent of population			Number per person per year	
$10,000 OR MORE						
All ages						
Total	124,002	7.4	9.3	94.3	13.7	5.2
Black	8,363	11.9	8.1	92.9	14.7	6.6
Hispanic	5,122	8.0	5.8	88.0	11.9	5.5
White	102,809	6.9	9.6	95.0	13.7	5.1
Under 17 years						
Total	37,342	3.0	2.3	94.5	10.8	4.8
Black	2,737	5.2	2.9	93.5	8.8	4.7
Hispanic	2,105	3.8	2.4	88.7	10.4	5.6
White	30,125	2.6	3.4	95.2	10.9	4.8
17-44 years						
Total	54,815	5.7	6.9	93.2	12.2	4.6
Black	3,979	10.3	6.2	92.4	15.1	6.5
Hispanic	2,242	7.6	5.1	86.6	11.7	5.3
White	44,827	5.0	7.0	93.7	11.9	4.4
45-64 years						
Total	26,348	14.2	17.2	96.0	18.0	5.7
Black	1,434	25.9	18.3	93.0	22.4	10.0
Hispanic	675	17.6	12.7	90.1	13.1	5.5
White	23,143	13.2	17.3	96.6	17.9	5.4
65 years and over						
Total	5,296	22.2	37.5	97.2	28.1	12.0
Black	212	36.3	42.9	95.1	29.5	11.6
Hispanic	101	40.6	45.5	90.7	37.0	5.9
White	4,714	21.0	37.0	97.6	27.1	12.2

[1] Includes private health insurance, Medicare, Medicaid, and other Federal programs. Based on 1976 data only.
[2] Includes bed days, work-loss days, school-loss days, and other restricted-activity days.
[3] Bed days are a subgroup of restricted-activity days.
[4] Includes those for whom income was unknown.

NOTE: Total includes all other races not shown separately. The categories white, black, and Hispanic are mutually exclusive.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics: Data from the Health Interview Survey.

Table 2. Physician and dentist visits and hospital days and episodes, according to income, age, and race or ethnicity: United States, average annual 1976–77

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Income, age, and race or ethnicity	Population in thousands	Physician visits		Dentist visits		Hospital episodes	
		Number per person per year	Percent of persons with 1 visit or more in year prior to interview	Number per person per year	Percent of persons with 1 visit or more in year prior to interview	Number of days per person per year	Percent of persons with 1 episode or more in year prior to interview
ALL INCOMES[1]							
All ages							
Total	211,400	4.9	75.3	1.6	49.2	1.1	10.5
Black	23,066	4.6	74.3	0.9	34.1	1.3	10.3
Hispanic	11,913	4.2	69.4	1.2	34.1	0.9	9.4
White	160,129	5.0	76.1	1.8	53.2	1.1	10.6
Under 17 years							
Total	60,399	4.1	74.5	1.5	50.6	0.4	5.3
Black	7,992	2.9	69.1	0.7	35.6	0.5	4.5
Hispanic	4,854	3.7	67.9	1.1	33.1	0.6	5.1
White	42,740	4.3	76.5	1.7	55.9	0.3	5.4
17-44 years							
Total	85,662	4.6	75.0	1.7	53.9	0.9	11.4
Black	9,373	5.2	76.6	1.1	38.4	1.3	13.6
Hispanic	4,957	4.1	68.9	1.3	36.5	0.9	12.2
White	64,281	4.6	75.6	1.8	58.3	0.8	10.9
45-64 years							
Total	43,306	5.6	74.8	1.8	47.6	1.6	12.3
Black	3,893	5.8	77.4	1.0	28.8	2.4	12.1
Hispanic	1,597	5.7	71.8	1.4	33.3	1.5	12.0
White	34,999	5.5	74.7	1.9	51.2	1.5	12.2
65 years and over							
Total	22,033	6.7	79.8	1.3	30.6	3.1	18.2
Black	1,807	6.9	79.0	0.6	17.1	3.2	15.4
Hispanic	505	5.5	79.8	0.7	21.0	2.7	15.6
White	18,109	6.8	79.9	1.4	32.9	3.2	18.5

See footnotes at end of table.

Table 2. Physician and dentist visits and hospital days and episodes, according to income, age, and race or ethnicity: United States, average annual 1976–77—Continued

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Income, age, and race or ethnicity	Population in thousands	Physician visits		Dentist visits		Hospital episodes	
		Number per person per year	Percent of persons with 1 visit or more in year prior to interview	Number per person per year	Percent of persons with 1 visit or more in year prior to interview	Number of days per person per year	Percent of persons with 1 episode or more in year prior to interview
LESS THAN $10,000							
All ages							
Total	68,268	5.4	75.2	1.2	36.6	1.6	12.9
Black	11,961	5.0	74.0	0.8	31.4	1.5	11.3
Hispanic	5,681	4.5	69.2	0.9	28.0	1.1	10.8
White	44,555	5.6	76.4	1.3	39.3	1.6	13.5
Under 17 years							
Total	17,848	3.7	71.3	0.9	37.1	0.5	6.1
Black	4,363	2.7	67.2	0.7	33.5	0.5	4.8
Hispanic	2,278	3.8	68.2	0.8	26.4	0.5	5.8
White	9,458	4.1	73.9	1.1	41.1	0.5	6.6
17-44 years							
Total	24,769	5.2	75.9	1.4	44.7	1.1	13.6
Black	4,386	5.9	77.7	1.0	36.2	1.5	15.4
Hispanic	2,307	4.4	68.1	1.2	32.2	1.1	14.3
White	15,693	5.1	77.0	1.5	49.5	1.0	12.8
45-64 years							
Total	12,015	6.5	74.3	1.3	31.8	2.2	15.0
Black	1,875	6.4	77.1	1.1	25.4	2.9	14.2
Hispanic	746	6.6	71.8	*0.7	24.3	1.9	13.8
White	8,418	6.4	73.9	1.4	34.6	2.1	15.1
65 years and over							
Total	13,637	6.8	79.6	1.0	25.2	3.2	18.7
Black	1,336	7.2	80.3	0.6	16.8	3.2	15.3
Hispanic	350	5.9	78.4	*0.6	19.0	2.6	14.6
White	10,986	6.8	79.6	1.1	26.9	3.2	19.1

See footnotes at end of table.

Table 2. Physician and dentist visits and hospital days and episodes, according to income, age, and race or ethnicity: United States, average annual 1976–77—Continued

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Income, age, and race or ethnicity	Population in thousands	Physician visits		Dentist visits		Hospital episodes	
		Number per person per year	Percent of persons with 1 visit or more in year prior to interview	Number per person per year	Percent of persons with 1 visit or more in year prior to interview	Number of days per person per year	Percent of persons with 1 episode or more in year prior to interview
$10,000 OR MORE							
All ages							
Total	124,002	4.7	76.2	1.9	56.8	0.8	9.4
Black	8,363	4.3	76.9	1.0	40.0	1.1	9.4
Hispanic	5,122	4.0	70.8	1.6	41.2	0.8	8.0
White	102,809	4.8	76.6	2.0	59.5	0.8	9.4
Under 17 years							
Total	37,342	4.3	76.6	1.8	57.4	0.3	5.0
Black	2,737	3.2	73.8	0.8	39.9	0.3	4.2
Hispanic	2,105	3.6	69.0	1.5	40.6	0.6	4.3
White	30,125	5.4	77.6	1.9	60.6	0.3	5.1
17–44 years							
Total	54,815	4.5	75.5	1.8	58.5	0.8	10.6
Black	3,979	4.6	78.1	1.3	43.0	1.1	12.3
Hispanic	2,242	4.1	71.5	1.5	41.4	0.7	10.4
White	44,827	4.5	75.8	1.9	61.3	0.7	10.3
45–64 years							
Total	26,548	5.3	75.8	2.0	55.1	1.3	11.3
Black	1,434	4.9	79.1	1.0	34.6	1.7	10.0
Hispanic	675	5.0	71.7	2.1	44.2	0.9	10.1
White	23,143	5.3	75.8	2.1	57.2	1.3	11.3
65 years and over							
Total	5,296	6.8	81.8	1.9	44.0	3.2	17.9
Black	212	8.4	79.2	*0.7	21.8	4.3	18.9
Hispanic	101	*5.1	85.1	*1.0	*26.4	*3.6	*18.8
White	4,714	6.9	81.8	2.0	46.0	3.1	18.0

[1]Includes those for whom income was unknown.

NOTE: Total includes all other races not shown separately. The categories white, black, and Hispanic are mutually exclusive.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics: Data from the Health Interview Survey.

Table 3. Death rates,[1] according to race, age, and sex: United States, 1970

(Data are based on the national vital registration system)

Age and sex	Race					
	All races[2]	Black	American Indian	Chinese-American	Japanese-American	White
	Number of deaths per 100,000 resident population					
Both sexes						
All ages	945.3	999.3	715.9	470.5	423.6	946.3
Under 5 years	502.6	880.1	736.5	196.5	266.4	440.3
5-14 years	41.3	55.5	62.5	30.6	25.5	39.1
15-24 years	127.7	212.4	311.2	52.6	68.7	115.8
25-34 years	157.4	381.2	452.2	56.0	51.5	129.9
35-44 years	314.5	724.9	745.0	141.3	123.5	267.0
45-54 years	730.0	1,383.8	1,110.4	390.3	302.8	666.2
55-64 years	1,658.8	2,570.6	1,573.9	1,200.7	673.1	1,577.1
65-74 years	3,582.7	4,719.4	2,841.0	3,254.6	1,508.9	3,490.1
75-84 years	8,004.4	7,860.7	5,666.2	6,396.6	4,466.8	8,043.3
85 years and over	16.344.9	11,300.5	9,367.6	8,756.9	10,786.9	16,889.7
Male						
All ages	1,090.3	1,186.6	872.4	661.1	540.4	1,086.7
Under 5 years	564.2	982.2	782.0	231.4	323.6	496.8
5-14 years	50.5	67.1	73.0	47.3	30.3	48.0
15-24 years	188.5	320.6	457.7	65.8	93.5	170.8
25-34 years	215.3	559.5	583.6	60.8	58.3	176.6
35-44 years	402.6	956.6	940.6	177.9	126.9	343.5
45-54 years	958.5	1,777.5	1,452.6	485.6	335.8	882.9
55-64 years	2,282.7	3,256.9	2,000.9	1,634.5	927.9	2,202.6
65-74 years	4,873.8	5,803.2	3,751.6	4,273.4	2,003.9	4,810.1
75-84 years	10,010.2	9,454.9	6,584.8	8,514.4	6,249.0	10,098.8
85 years and over	17,821.5	12,222.3	10,456.7	10,383.0	13,182.6	18,551.7
Female						
All ages	807.8	829.2	565.3	259.6	324.7	812.6
Under 5 years	438.5	777.5	690.8	159.6	206.8	381.1
5-14 years	31.8	43.8	51.9	13.1	20.9	29.9
15-24 years	68.1	111.9	169.5	38.8	44.9	61.6
25-34 years	101.6	231.0	326.3	51.1	46.1	84.1
35-44 years	231.1	533.0	564.3	101.6	121.7	193.3
45-54 years	517.2	1,043.9	794.6	269.8	272.6	462.9
55-64 years	1,098.9	1,986.2	1,189.3	647.6	418.3	1,014.9
65-74 years	2,579.7	3,860.9	2,012.9	1,815.2	1,136.6	2,470.7
75-84 years	6,677.6	6,691.5	4,893.7	3,511.2	3,215.4	6,698.7
85 years and over	15,518.0	10,706.6	8,523.5	6,403.9	8,211.0	15,980.2

[1] Excludes deaths of nonresidents of the United States.
[2] Includes other specified races not shown separately.

SOURCE: Division of Vital Statistics, National Center for Health Statistics: Unpublished data.

Table 4. Age-adjusted death rates for selected causes of death, according to race: United States, selected years 1950–77

(Data are based on the national vital registration system)

Cause of death (ICDA code)[1] and race	Year				
	1950	1960	1965	1970[2]	1977[2]
	Deaths per 100,000 resident population				
Major cardiovascular diseases (390-448)					
All races[3]	425.0	393.5	374.2	340.1	274.2
Black	572.6	516.5	495.9	450.0	355.3
White	411.7	381.9	367.8	330.3	267.4
Diseases of heart (390-398,404,410-429)					
All races[3]	308.5	286.2	273.9	253.6	210.4
Black	381.8	334.5	323.0	307.6	256.9
White	301.7	281.5	269.3	249.1	206.8
Cerebrovascular diseases (430-438)					
All races[3]	88.6	79.7	72.7	66.3	48.2
Black	151.0	140.2	131.8	114.5	79.5
White	83.2	74.2	67.2	61.8	45.3
Malignant neoplasms (140-209)					
All races[3]	125.3	125.8	127.0	129.9	133.0
Black	129.1	142.3	146.9	156.7	170.1
White	124.7	124.2	125.3	127.8	130.0
Malignant neoplasms of digestive organs and peritoneum (150-159)					
All races[3]	47.7	41.1	38.3	35.2	33.4
Black	49.6	48.3	47.7	45.3	46.1
White	47.3	40.3	37.3	34.2	32.1
Malignant neoplasms of respiratory system (160-163)					
All races[3]	12.8	19.2	23.0	28.4	34.3
Black	10.4	20.3	24.5	33.5	44.1
White	13.0	19.1	22.8	28.0	33.5
Diabetes mellitus (250)					
All races[3]	14.3	13.6	13.4	14.1	10.4
Black	17.2	22.0	23.2	26.5	20.8
White	13.9	12.8	12.5	12.9	9.4
Accidents (E800-E949)					
All races[3]	57.5	49.9	53.3	53.7	43.8
Black	70.9	66.4	69.8	74.4	53.9
White	55.6	47.6	51.0	51.0	42.5
Suicide (E950-E959)					
All races[3]	11.0	10.6	11.4	11.8	12.9
Black	4.2	4.7	5.6	6.1	7.3
White	11.6	11.1	11.9	12.4	13.6

See footnotes at end of table.

Table 4. Age-adjusted death rates for selected causes of death, according to race: United States, selected years 1950–77—Continued

(Data are based on the national vital registration system)

Cause of death (ICDA code)[1] and race	Year				
	1950	1960	1965	1970[2]	1977[2]
Homicide (E960–E978)	Deaths per 100,000 resident population				
All races[3]	5.4	5.2	6.2	9.1	9.6
Black	30.5	27.4	32.1	46.1	38.8
White	2.6	2.7	3.2	4.7	5.9

[1]Because of decennial revisions of the International List of Causes of Death and changes in rules of cause-of-death selection, there is lack of comparability to a varying degree for some causes from one revision to the next. The beginning dates of the revision are 1949, 1958, and 1968. The cause-of-death titles are based on the Eighth Revision International Classification of Diseases, Adapted for Use in the United States (ICDA).
[2]Excludes deaths of nonresidents of the United States.
[3]Includes all other races not shown separately.

NOTE: Age adjustment is computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940. Age adjustment is based on 10 age groups, except that the black rates were based on 9 age groups.

SOURCE: Division of Vital Statistics, National Center for Health Statistics: Unpublished data.

CHAPTER II

Diet, Nutrition, Disease, and the Dietary Goals[a]

Introduction

Diet and its relationship to health have long concerned Americans. Until almost the middle of this century, the major concern has been undernutrition, which causes diseases related to a lack of one or more of the essential elements found in food. In recent years, the focus includes not only conditions related to inadequate consumption of one or more essential nutrients but also diseases that may be precipitated by overconsumption of food and constituents within food. This problem was brought to the attention of the general public by the release of the Dietary Goals for the United States by the U.S. Senate Select Committee on Nutrition and Human Needs chaired by Senator George McGovern (Democrat-South Dakota) and was discussed in *Healthy People, The Surgeon General's Report on Health Promotion and Disease Prevention* (Office of the Assistant Secretary for Health and the Surgeon General, 1979). This chapter discusses the relationships between and among diet, nutrition, and health in the context of the Dietary Goals, the role of diet in the etiology of selected diseases, and recent data on the dietary intake and nutritional status of the U.S. population. The Dietary Goals are used here merely as a vehicle for discussion.

The first edition of Dietary Goals was published by the U.S. Senate Select Committee on Nutrition and Human Needs in February 1977, and a second edition was released in December of that same year (U.S. Senate Select Committee, 1977a and b). The purpose, as stated in both editions by Senator McGovern, was "to point out that the eating patterns of this century represent as critical a public health concern as any now before us."

The first edition of the Goals, prepared by the Select Committee's staff, was based on the following: selected Committee hearings on the relationship of diet to disease; the 1974 national nutrition policy hearings; guidelines established by governmental and professional bodies in the United States and at least eight other nations; a variety of expert opinions (U.S. Senate Select Committee, 1974 and 1977c). According to testimony, changes have occurred in the diet of Americans that could cause a wave of malnutrition (from both overconsumption and underconsumption) as damaging to health in the United States as the widespread, contagious diseases of the early part of the century. Overconsumption of fats, sugar, salt, and alcohol has been related to 6 of the 10 leading causes of death. The six causes listed were heart disease, stroke, cancer, diabetes, arteriosclerosis, and cirrhosis of the liver. In addition, diet is thought to contribute to the development of conditions, such as hypertension, that affect health.

Published in early 1977, the first set of Dietary Goals stimulated extensive discussion and controversy, resulting in further hearings and solicitation of views from a wider segment of the scientific community and interested segments of the agricultural and food industries (U.S. Senate Select Committee, 1977d, e, and f). A second edition of the Dietary Goals[1] was released in December of 1977. In this edition, an added goal stressed the need for individuals to avoid becoming overweight; for overweight individuals, it encouraged decreased caloric intake and increased physical activity (U.S. Senate Select Committee, 1977b). The revised goals of the second edition are as follows:

- To avoid overweight, consume only as much energy (calories) as is expended; if overweight, decrease energy intake and increase energy expenditure.
- Increase the consumption of complex carbohydrates and "naturally occurring" sugars from about 28 percent of energy intake to about 48 percent of energy intake.
- Reduce the consumption of refined and processed sugars by about 45 percent to account for about 10 percent of total energy intake.

[a] Prepared under the supervision of the Nutrition Statistics Branch, Division of Health Examination Statistics, National Center for Health Statistics, with special assistance of Connie M. Dresser.

[1] For the purpose of this paper, any subsequent reference to the Dietary Goals will refer to the second edition (U.S. Senate Select Committee, 1977b).

- Reduce overall fat consumption from approximately 40 percent to about 30 percent of energy intake.
- Reduce saturated fat consumption to account for about 10 percent of total energy intake; balance that with polyunsaturated and monounsaturated fats, which should account for about 10 percent of energy intake each.
- Reduce cholesterol consumption to about 300 milligrams a day.
- Limit the intake of sodium by reducing the intake of salt to about 5 grams a day.

Along with the Dietary Goals, the Committee made recommendations for selecting foods. (See "Recommended changes in U.S. diet.") Some Senators on the Committee expressed concerns about the Goals and the food selection guide. In a supplemental foreword to the second edition, these Senators voiced serious reservations because of the disagreement among scientists as to recommended changes, for example, the recommended level of dietary cholesterol. They suggested that the following statement be added on the pages of the report that carried either the Goals or the food selection list: "The value of dietary change remains controversial and science cannot at this time insure that an altered diet will provide improved protection from certain killer diseases such as heart disease and cancer" (U.S. Senate Select Committee, 1977b).

The American Society for Clinical Nutrition (ASCN) convened a task force to come to a consensus that would be of help to public officials in formulating national nutrition policy. The panel convened by ASCN was asked to examine all available scientific evidence on six dietary issues that are thought to bear heavily on the prevalence of arteriosclerotic disease, diabetes, hypertension, liver disease, dental caries, and obesity. The resulting consensus document was presented in a public symposium in May 1979 (American Society for Clinical Nutrition, 1979).

During the summer of 1979, the first *Surgeon General's Report on Health Promotion and Disease Prevention* was released (Office for the Assistant Secretary for Health and the Surgeon General, 1979). In the section on improved nutrition, it was stated that given what is already known or strongly suspected about the relationship between diet and disease Americans would probably be healthier as a whole if they followed certain dietary guidelines. The guideline in the report are compatible with the U.S. Dietary Goals but do not recommend specific levels of consumption.

The Dietary Goals remain controversial, and strong arguments exist both for and against their adoption. However, they serve as a basis for discussion on nutrition and its relationship to health and disease. Further research has been a major recommendation of all those involved in the development of the Goals as well as those who believe that the Goals as currently stated are not in the best interests of the general public. The relationships between and among diet, health, and disease are complex. The various views of scientists, physicians, and nutritionists will be reviewed in the following section.

Diet, its relationship to disease

Foods eaten by Americans have been implicated as risk factors in several diseases that are the leading causes of death in the United States. A risk factor is a specific characteristic of the population that is associated with a higher incidence (number) of a specific health problem. Examples of common risk factors include obesity, smoking, excessive use of alcohol, age, sex, heredity (genetic typing), and diet pattern. Usually more than one risk factor is associated with a disease process, sometimes making it difficult to identify the exact relationship involved.

The existence of a risk factor does not necessarily mean that an individual will develop the condition to which that risk factor is related. It only indicates that the individual has a greater chance of developing the condition. For example, smoking increases the risk of lung cancer, but it does not mean than an individual will definitely develop lung cancer. Similarly, stopping smoking diminishes the risk of lung cancer, but it does not guarantee that an individual will not develop cancer.

Some scientists believe that the typical American diet, eaten over a long period of time, is a major risk factor for the development and progression of diseases such as coronary heart disease, cancer, and diabetes. However, other scientists do not believe that the link between diet and these diseases has been firmly established. Various opinions on these relationships will be reviewed.

Obesity

When the intake of calories exceeds that which is expended for growth, maintenance, and activity, the excess remains deposited in the body as fat. Obesity, overweight resulting from excess body fat, has been linked as a risk factor in the development of hypertension, gallbladder disease, and diabetes (Olson, 1979a; Tobian, 1979). Obesity has been demonstrated as an independent risk factor in the development of coronary heart disease (CHD) in some studies but not in others. However, obesity is frequently associated with other primary risk factors of CHD, such as elevated plasma cholesterol, elevated blood pressure, and cigarette smoking (Shank, 1979).

In addition to the increased risk of developing certain diseases, there are the social, psychological, and economic costs of obesity. Van Itallie (1979) has outlined a number of health disorders and other problems believed to be caused by obesity. Obese people appear to be discriminated against in both educational and employment opportunities, particularly with respect to the opportunity for better paying jobs (Crowley, 1976).

Obesity has been defined in a number of studies in a variety of ways. The prevalence of obesity in the United States is high, but exact rates are difficult to ascertain because definitions are not standard.

The 1971–74 Health and Nutrition Examination Survey (HANES-I),[2] conducted by the National Center for Health Statistics (NCHS), defined as obese any adult with a triceps skinfold measurement greater than the 85th percentile measurement for people 20–29 years of age of the same sex. According to this measurement, 13 percent of all males 20–74 years of age and almost 23 percent of all females 20–74 years of age were obese. The prevalence of obesity increased with age. More black females were obese than white females, and the rates for white males and black males were similar (NCHS, 1978).

While there are objective standards for overweight and obesity, the way people perceive themselves is totally subjective. In the Health Interview Survey (HIS) conducted by NCHS, people over 17 years of age are asked if they consider themselves to be overweight. During the 1974 survey, about 30 percent of all males and 49 percent of all females stated that they did. More white women (50 percent) than black women (44 percent) considered themselves overweight, and, as income increased, more women perceived themselves overweight (NCHS, 1978). The prevalence of obesity as measured by skinfold measurements showed opposite relationships.

The importance of maintenance or reduction of weight to within recommended guidelines is not controversial. In fact, one of the major criticisms of the original list of Dietary Goals was the absence of a specific recommendation about the need to balance the energy intake with energy expenditure (Harper 1978a and b; Leveille, 1978). The second edition added a goal specifically dealing with weight control (U.S. Senate Select Committee, 1977b). In the Surgeon General's report, the importance of weight control was stressed.

On the other hand, methods used to maintain and reduce weight are controversial. The factors that allow some individuals to easily balance energy intake and expenditure and to maintain weight within recommended ranges while others are unable to do so are far from being understood (Widdowson and Dauncey, 1976).

Obesity has been treated using a variety of techniques, but the rate of success is low, particularly when measured over time. The Fogarty International Conference on Obesity (Fogarty International Center, 1975) developed a list of recommendations regarding various aspects of obesity. This list strongly recommended the prevention of obesity, particularly by encouraging increased physical activity. When obesity exists, the list recommended that a physician be consulted before any major weight loss be undertaken and that diet plans be developed on an individual basis. Some reservations were expressed about the use of fasting, drugs, and hormones in the treatment of obesity. Although effective, bypass surgery is potentially hazardous. It was recommended only in extreme cases and only after other, more conservative techniques had failed.

Hypertension

Hypertension, or high blood pressure, is a risk factor for CHD as well as an important factor in other life-threatening diseases, such as renal (kidney) failure, stroke, and congestive heart failure. It is among the most common physical abnormalities in adults and possibly in teenagers (Shank, 1979).

Blood pressure measurements for people 6–74 years of age were taken during HANES-I. The prevalence rate of hypertension, based on a single elevated blood pressure reading[3] by a physician, was 18 percent among those 18–74 years of age. Black adults had higher rates than white adults. Almost 28 percent of the black males and approximately 29 percent of the black females were classified as hypertensive. Approximately 19 percent of the white adults and 16 percent of black adults were classified as borderline hypertensive. The prevalence of hypertension increases rapidly with age, particularly for women (NCHS, 1977a).

Obesity aggravates hypertension, but the exact relationship is unknown. As weight increases so do the prevalence and incidence of hypertension. The greater the weight gain, the greater the rise in blood pressure. Data also indicate that when people with high blood pressure lose weight their blood pressure generally decreases (NCHS, 1977b; Shank, 1979). But, few people placed on weight reduction regimes are successful in adhering to the diets over a long period. Therefore, total weight loss is usually limited, and lost weight is frequently regained.

A sodium-restricted diet along with drug therapy is an accepted treatment to lower blood pressure (Tobian, 1979). However, whether or not a high level of sodium consumption is a causal factor in the development of hypertension is controversial, based on studies of the salt[4] intake and prevalence of hypertension among various populations.

Dahl (1972) found a positive correlation between salt and hypertension. The highest intakes of salt were found in northern Japan (28 grams per day) where about 38 percent of the population is hypertensive. In contrast, Alaskan Natives rarely add salt to food (4 grams per day), and they rarely have hypertension.

Shank (1979) reviewed studies that ranked individuals according to reported salt intake or by the amount of sodium excreted in the urine. Findings from these studies indicate that elevated blood pressure levels are more prevalent among those who have high salt intakes. In addition, prolonged feeding of diets high in salt to experimental animals does induce hypertension. While Shank (1979) states that no direct evidence indicates that

[2] The nutrition component of HANES-I consisted of a general physical examination in addition to dermatological, ophthalmological, and dental examinations; body measurements; biochemical assessments; and dietary intake measures.

[3] An elevated blood pressure reading was defined in HANES-I as a systolic measurement greater than 160 or a diastolic measurement greater than 95.

[4] Salt as used here refers to sodium chloride, which contains 400 milligrams of sodium per gram.

moderate salt intake increases blood pressure in humans, he does support the theory proposed by Meneely and Battarbee (1976). They postulate that the effects of excessive dietary sodium on blood pressure are determined by genetic predisposition and enhanced by low levels of potassium consumption, which is typical of the current American diet pattern.

Based on evidence such as this, Cullen, Paulbitski, and Oace (1978), Hegsted (1978), Latham and Stephenson (1977), and Tobian (1979) have argued that it is appropriate to recommend reduced salt consumption for the U.S. population. Not all scientists and clinicians agree that reducing salt intake is appropriate or necessary for those who do not have elevated blood pressure (Harper, 1978a).

Simopoulos (1979) states, "Although epidemiologic studies suggest that in populations with low intakes the prevalence of hypertension and its complications is less, and although it is known that lowering the salt intake of a hypertensive patient usually improves his hypertension, it is *not* known whether a low-salt intake earlier in the life of that individual would have prevented or delayed the onset of hypertension . . . . Data from epidemiologic studies indicate there may be racial differences in the ability to handle sodium excretion, and recent evidence that blood pressure can be raised in some hypertensive individuals by incremental increases in dietary sodium to high levels make concern about excess sodium intake appropriate. Notwithstanding such suggestive evidence of a possible deleterious effect of excessive sodium intake in some hypertensive individuals, we do not yet have adequate data to recommend a specific level of sodium intake as a recommended allowance for the general population."

Recently, Senator McGovern stated that the 5 grams of salt per day recommended by the Dietary Goals was intended to represent salt added to the diet by individuals or processors and did not include salt naturally occurring in food (American Dietetic Association, 1979). This would increase the total recommended salt level from 5 grams to a level of 6–8 grams per day. Nevertheless, the controversy probably will not lessen between those who believe that evidence is sufficient to recommend limitations of salt intake for the general population and those who believe that such limitations should be recommended only by an individual's physician. The Surgeon General suggests "that a prudent approach, given present knowledge, would be to limit salt consumption by cooking with only small amounts, refraining from adding salt to food at the table, and avoiding salty prepared foods" (Office of the Assistant Secretary for Health and the Surgeon General, 1979).

Coronary heart disease

Much research has been conducted in an attempt to link diet with coronary heart disease (CHD). Some scientists believe that the evidence of this link is indisputable, while others interpret the same evidence differently. CHD is characterized by the deposit and accumulation of lipids, particularly cholesterol, in the arteries. Blood circulation is thereby impaired, reducing and in some cases completely stopping circulation to tissues. If blood flow is reduced, cellular function is reduced. If arteries are completely blocked, tissues die. A major cause of death related to CHD is myocardial infarction (i.e., death of the heart muscle caused by interrupted blood supply), commonly called a heart attack. Even if not immediately fatal, myocardial infarction is a risk factor for death from CHD up to 10 years after its occurrence (McGill and Mott, 1976).

Studies linking diet and CHD include observations in populations, in small groups, and in individuals as well as animals. The link between diet, particularly fat, and CHD has been described by some scientists in the following way: Diets high in saturated fat and/or cholesterol raise an individual's blood lipid levels (hyperlipidemia), particularly the serum cholesterol level (hypercholesterolemia). Elevated blood lipids induce atherosclerosis. Individuals with atherosclerosis are highly susceptible to CHD.

Proponents of this lipid hypothesis cite evidence from several population studies (Blackburn, 1979; Stamler, 1979; Hegsted, 1978; Glueck and Connor, 1978). Population studies among large heterogeneous populations reveal strong relationships between the incidence of atherosclerotic disease, hyperlipidemia (particularly hypercholesterolemia), and the diet of the population. Population groups at high risk from CHD have diets higher in saturated fats and cholesterol than populations at low risk. Elevated serum cholesterol has also been demonstrated as a risk factor for CHD. McGill (1979) has documented an historical account of experimental studies surrounding dietary cholesterol and atherosclerosis. Serum cholesterol levels are significantly lower in countries where CHD is rare than in countries where CHD is prevalent. Studies have examined people from a country with low incidence of CHD who migrate to a country with high incidence of CHD. This migrant population develops a prevalence of CHD similar to their adopted country once they accept their adopted country's dietary pattern.

Other scientists argue that the epidemiological evidence frequently cited does not necessarily demonstrate the validity of the lipid hypothesis (Harper, 1978a and b; Kritchevsky, 1979; Leveille, 1978; Mann, 1977; Olson, 1979a and b). Olson (1979a) and Harper (1978a) state that atherosclerosis is a disease of unknown etiology. They challenge the population studies that are used as the basis for linking fat, cholesterol, and CHD. They point out that population studies have not only shown relationships between CHD and dietary fat and cholesterol but also between CHD and smoking, personality traits, exercise, water hardness, and family history of heart disease. These latter relationships are not related to diet.

In a review of studies on individuals eating controlled diets on a metabolic ward, Glueck and Connor (1978) found substantial evidence to indicate that as the amount of dietary cholesterol increases there is a consistent

increase in the level of serum cholesterol. Olson (1979a) concurs but points out that only 60 percent of free living individuals with similar diets will show such changes in serum cholesterol. Therefore, it is difficult to predict the effect of highly modified diets in a free living population.

Considerable controversy exists about the relationship between saturated and polyunsaturated fats in the diet and serum cholesterol levels in controlled human studies. Most reports have demonstrated that serum cholesterol increases as levels of saturated fats are increased in diets and decreases as the levels of polyunsaturated fats are increased (Glueck and Connor, 1978; Glueck, 1979).

Studies of individuals within populations have not shown a relationship between an individual's dietary cholesterol intake and their serum cholesterol levels (Mann, 1977; Nichols et al., 1976a). However, Hegsted (1978) points to a wide variance in the way individuals respond to the same diet. In addition, the reliability and accuracy of the data based on diet histories or 24-hour recalls can be questioned. Food habits vary from day to day, and a single day's intake may not reflect an individual's usual dietary intake. Therefore, Hegsted has concluded that a lack of a relationship between serum cholesterol and diet is not an unexpected finding and does not negate the finding that populations with high levels of serum cholesterol tend to consume diets high in cholesterol and fat, primarily saturated fat. Others believe that the lack of a relationship between an individual's diet and the level of serum cholesterol indicates that the relationship between dietary intakes and serum cholesterol is not a direct cause-effect relationship.

At present, clinical evidence does not show that changing the serum cholesterol level will affect life expectancy. Ahrens (1976) reviewed 11 clinical intervention trials in five countries. In each of these, either diet or drug therapy was instituted with the goal of lowering serum cholesterol. While each of the studies did lower serum cholesterol 5–16 percent, overall mortality was not affected. Some of these studies involved people with prior heart attacks, and others involved individuals who were free of known heart disease.

Based on some of the evidence reviewed, a number of scientists and clinicians advocate a diet for the U.S. population that is lower in fat, particularly saturated fat and cholesterol, than the habitual diet. These recommendations are like those suggested by the Dietary Goals. Others believe that dietary modification may be helpful for those in the population who have evidence of the development of CHD or its associated risk factors, but they believe that recommendations with regard to the diet of the general population are premature.

Harper (1977, 1978a and b) notes that the changes in diet that some believe are producing an epidemic of chronic diseases have occurred during the past 50 years—a time when nutritional deficiency diseases have been eliminated, most infectious diseases have been controlled, infant and child mortality has fallen steadily, and life expectancy has increased by 20 years. In addition, the general recommendations for the entire population contained in the Dietary Goals do not adequately account for the special nutrient needs of some age and sex subgroups (Olson, 1979a and b; Harper, 1977).

Currently, the Multiple Risk Factor Intervention Trial (MRFIT) is being conducted to determine if interventions applied together to reduce multiple risk factors, such as hypertension, cholesterol levels, and smoking, will retard the development of heart disease. When completed in 1982, this study should indicate whether or not a comprehensive program of preventive care is successful in changing habits of individuals and significantly reducing the incidence of deaths from heart disease (Glueck, 1979).

Dietary fat and cholesterol are not the only dietary constituents implicated in CHD. In a recent review, Little, McGuire, and Derksen (1979) state that diets of populations in which 70 percent of the calories is from starch are associated with low serum cholesterol level and triglyceride levels. Clinical studies indicate that sucrose (table sugar) and fructose (sugar in fruit) tend to increase the lipid levels in blood, while glucose (sugar from starch) and starch do not. Men are more susceptible to this tendency than premenopausal women, and older people are more susceptible than younger people. The authors state that further testing is necessary to determine whether substituting starch and glucose for sucrose and fructose in the diet of the general population would significantly lower serum lipids.

Increased serum lipid levels and many diseases have been associated with lack of dietary fiber. Sources of dietary fiber include whole grain cereals and breads, fruits, vegetables, legumes, nuts, and seeds. Burkett, Walker, and Painter (1974) observed that black Africans who eat diets high in bran or cereal fiber have little or no CHD as well as lower incidences of diverticular disease, colon cancer, and gallstones. However, Connell (1977) failed to find a relationship between the amount of bran in the diet and serum cholesterol levels in a controlled diet study of young males. Zilversmit (1979) reviewed studies relating dietary fiber to CHD. He was not convinced that the evidence was indicative of a beneficial effect from dietary fiber.

Some scientists believe that evidence from studies should be conclusive before recommending massive dietary change in the United States. Others believe that the evidence is adequate to encourage immediate dietary changes such as those suggested by the Dietary Goals. The Surgeon General ". . . suggests that Americans who have been consuming high fat diets should attempt to reduce serum cholesterol by changing eating patterns. Moreover, these changes should begin at an early age." In fact, many scientists have made some adjustments in their own diets because of their concern about the relationship between diet and heart disease (Norum, 1978).

Cancer

Diet has been related to cancer primarily through population studies and animal studies. Based on population studies, Carroll and Khor (1975) observed a highly significant relationship between breast cancer in females and the

consumption of dietary fat. The same relationship was found between dietary fat and cancer of the colon in both males and females. The mortality rate from breast cancer and cancer of the colon increased as the grams of fat in the diet increased.

Gori (1977) and Wynder (1977) reviewed a series of studies on cancer in migrant populations. They point out that the incidence rate and mortality trends of migrants generally change from those of their native population to those of their host population. For example, Japan has a higher rate of stomach cancer and a lower rate of colon cancer than the United States has. However, third-generation descendants of Japanese immigrants to this country have rates of stomach and colon cancer like those of the total U.S. population. Wynder (1977) also notes an increase in breast cancer among Japanese women who emigrate to Hawaii, which has a diet pattern similar to the United States. American diets consist of larger amounts of dietary fat, cholesterol, and caloric intake, and lower consumption of vegetables, grains, and dietary fiber compared with Japanese diets. In American diets, fat and cholesterol are both derived principally from animal sources, that is, meat and dairy products. It is unlikely that the observed differences are related to pollution and food contamination because general environmental pollution levels and food contamination in Japan are similar to those in the United States (Gori, 1977).

Studies of animals support the apparent relationship between fat consumption and cancer of the breast and colon (Wynder, 1977). Findings from studies of animals along with the epidemiological evidence indicate that dietary fat might be a factor in certain cancers. However, the relationship remains speculative at this time (Simopoulos, 1979; Harper, 1978a).

Enig, Munn, and Keeney (1978) disagree with the relationships proposed between dietary fat and cancer, particularly the relationship between the level of dietary fat from animal sources and cancer. They correlated the increased per capita consumption of dietary fat to cancer mortality and found significant positive relationships with total fat and vegetable fat and a negative, or no, correlation with animal fat. Their research points to the increased use of partially hydrogenated vegetable fats in margarines, oils, and vegetable shortenings as a major factor. They state their analysis is speculative and should be used only as a clue to a possible relationship between diet and cancer. They point out that animal fat has decreased since 1909 as a source of dietary fat, and vegetable fat has increased. They also point to several discrepancies in population studies. For example, Greece has less than one-fourth the breast cancer rate of Israel, but it has essentially the same total dietary fat intake. People in the Netherlands consume approximately 100 grams of animal fat per day, as do people in Finland. However, the rates of breast and colon cancer in the Netherlands are almost twice the rates in Finland. In the Netherlands, 65 percent of the total fat comes from animal sources, and animal sources account for 88 percent of the total fat in Finland.

Bierman (1979) has reviewed several studies pertaining to dietary fiber. Lack of dietary fiber has also been implicated in cancer, particularly cancer of the colon. This theory is generally attributed to Burkett, Walker, and Painter (1974). Other than the evidence from population studies that also implicate dietary fat, there is little evidence of the link between lack of fiber and cancer of the colon. This point was reiterated at the American Cancer Society's Science Writers Seminar held in Daytona Beach, Fla., on March 26, 1979 (Newell, 1979).

Many of the possible relationships between diet and cancer are controversial. This area of research is relatively new. Although adherence to the Dietary Goals may benefit the population by decreasing the risk of cancer, evidence to substantiate this is lacking at the present time.

Diabetes mellitus

Diabetes mellitus[5] is characterized by hyperglycemia (i.e., an abnormally high level of glucose in the blood) and relative or absolute deficiency of insulin, a hormone manufactured by the pancreas which controls blood glucose levels. The cause cannot be directly ascertained in the vast majority of cases of diabetes. Diabetics are generally divided into two categories: adult-onset diabetes and youth-onset diabetes. Adult-onset diabetes is more common and usually milder. About three-fourths of the adult-onset diabetics are obese. Obesity is rarely seen in youth-onset diabetes, which is typically more severe and more difficult to control (Van Itallie, 1979).

In a review of studies of the relationship between nutrition and diabetes, West (1976) states that the degree and duration of adiposity (excess fat tissue) are factors most strongly and consistently associated with the prevalence of adult-onset diabetes. Some population studies have indicated that the rate of diabetes increases as the sugar intake in a population increases. However, increase in sugar intake is usually coupled with other factors, such as decreased exercise and increased total calories and fat, that lead to obesity. Thus obesity may be the risk factor for diabetes rather than a specific diet component such as sugar (West, 1976; Van Itallie, 1979). Evidence from animal studies also supports obesity as the major risk factor. West reviewed a number of studies in which different diet components (e.g., sugar, protein, or fat) were used to induce diabetes in susceptible laboratory animals. Based on these studies, he concluded that obesity rather than any specific diet component induced the diabetes.

Treatment of diabetes involves diet management, which may be coupled with insulin injections or pills. For the obese diabetic, usually the adult onset, weight reduction is of primary importance. It not only helps control diabetes, but it also reduces the severity of the disease. In the lean diabetic, usually the youth onset, calories should be adequate to cover energy requirements. Until recently, carbohydrate was restricted in the diets of diabetics in the

[5] Diabetes millitus is the most common form in a group of diseases called diabetes. It is the only form discussed in this chapter and will be referred to simply as diabetes.

United States. This is no longer a major recommendation. Asian diabetics have successfully controlled the disease with diets much lower in fat and cholesterol and higher in carbohydrate than the diets of diabetics in the United States. These diabetics had much lower incidences of atherosclerosis and CHD than diabetics in the United States. Current dietary recommendations include higher levels of carbohydrate and lower levels of fat than found in the "average" American diet. The diet for the diabetic continues to restrict sugar other than that naturally occurring in fruits, vegetables, and milk; but it now includes carbohydrate from starch in liberal amounts (West, 1976).

Diet is important in the treatment of diabetes, but there is little evidence that a specific diet component, such as excess sugar, can be directly linked to the cause of the disease. However, there is substantial evidence that excessive food intake leading to obesity is strongly associated with the prevalence of diabetes (Bierman, 1979).

Current diet trends in the United States

Information on food consumption in the United States is derived from three types of data sources: the national food supply, household food consumption surveys, and individual intake surveys. Information derived from each of these sources differs because of differing methodology. Because of major differences, data comparisons are difficult. However, the Dietary Goals are based on the national food supply, which was the most current source of information at the time the Goals were devised. Therefore, the Dietary Goals should be considered in relation to the national food supply.

The nutrient analysis of the national food supply (NFS) is estimated from the disappearance of major foods into primary trade channels, which vary from item to item. In general, these items are measured separately rather than after they are combined into finished products such as bread, cake, or frozen dinners. NFS statistics provide an average of per capita food and nutrient supplies at a given point in time. Changes over time can be estimated because the food and nutrient levels have been calculated annually since the 1909–13 base period (Friend, Page, and Marston, 1979).

Household food consumption surveys are another way that information is obtained about food consumption in the United States. Currently, the Nationwide Food Consumption Survey (NFSC) of the U.S. Department of Agriculture (USDA) is the only such national survey. It has been conducted approximately every 10 years since 1935. Since information is obtained from individual households, nutrient levels and food use can be studied for differences in consumption patterns by regions, urbanization, household size, income, and other variables. The data include only food used from household food supplies and not that purchased and eaten away from home. The most recent household food consumption survey was part of the 1977–78 NFCS for which data are not yet available. Preliminary data will be available in late 1979. However, published data are available from the survey conducted during 1965–66 (Science and Education Administration, 1979).

Both NFS and household food consumption surveys are estimates of foods used but not necessarily eaten. Therefore, they overestimate the per capita intake of foods and nutrients, a disadvantage not found when the nutrient content of the diet is estimated based on actual food intake. During the Health and Nutrition Examination Survey of 1971–74 (HANES-I), a representative sample of the civilian noninstitutionalized population of the United States (NCHS, 1976) was asked to recall all foods and beverages taken during a 24-hour period. The validity of the 24-hour recall as used in HANES-I has been questioned as a measure of individual nutrient intake. Although it may not reflect the usual intake of each individual, a 24-hour recall probably does reflect the mean intake of most nutrients for a group of individuals (Morgan, et al., 1978; Keys, 1979). In addition to the 24-hour recall, HANES-I data included daily or weekly frequency of consumption of selected food for a 3-month interval.

The rest of this section addresses selected components of the U.S. diet using NFS data to illustrate trends and HANES-I data to examine current intake.

Food energy (calories)

Food energy is measured in calories. The total calories available as estimated from NFS has decreased about 5 percent during this century (Friend, Page, and Marston, 1979). Data from NFS also indicate that percents of calories available from fat and carbohydrate have shifted during this century. Available calories from fat have increased about 10 percentage points, and available calories from carbohydrate have decreased about 10 percentage points (Friend, Page, and Marston, 1979). Calories available from protein have remained rather constant at about 12 percent (table 1).

On a per capita basis, the calories available per person as estimated from NFS is about 40 percent greater than calories actually eaten per person as estimated from individual intakes during HANES-I. This disparity results from methodological differences. NFS data are based on all edible food, including that which is not eaten but is discarded for various reasons. HANES-I data are based on food actually eaten during a 24-hour period.

Fat and fatty acids

NFS estimates of available fat indicate that the total available fat has increased since 1909–13 about 25 percent (Friend, Page, and Marston, 1979). About 90 percent of fat estimated by NFS comes from three major groups: fats and oils; meat, fish, and poultry; and dairy products. Fats and oils contribute the largest proportion—about 50 percent—a proportion that has increased 7 percentage points since 1909–13. Changes have occurred in the sources of fats and oils, with the amount from butter and lard decreasing sharply and the amount from salad and cooking

oils, shortenings, and margarine increasing. The proportions of fat from the other two groups are not much greater today than they were in 1909–13 (Friend, Page, and Marston, 1979; Agricultural Research Service, 1975).

Table 2 shows the percent contribution of food groups to total fat intake as reported during HANES-I. The major contributors are the same as those in NFS, that is, about 28 percent from meat, fish, and poultry, about 19 percent from dairy products, and about 15 percent from fats and oils. Not only the total fat but also the percent contribution of fat to total calories was less for HANES-I data than for NFS data (table 1). This is probably because a large proportion of HANES-I respondents reported not eating the visible fat on meat. Although the mean fat intake was greater than that recommended by the Dietary Goals, about 30 percent of HANES-I respondents reported intakes with 33 percent or less calories derived from fat. Thirty-three percent is the upper limit suggested by the Dietary Goals. Indications are that some people may be limiting fat in their diet.

The Dietary Goals recommended that monounsaturated, polyunsaturated, and saturated fatty acid consumption each account for about 10 percent of total energy intake (range 8–12 percent) (U.S. Senate Select Committee, 1977b). Based on NFS and HANES-I data, mean levels of both saturated and monounsaturated fatty acids are greater than recommended (table 1). However, approximately 36 percent of all HANES-I respondents reported intakes that contained 12 percent or less of calories derived from saturated fatty acids. Females and black people were more likely to eat foods with lower levels of saturated fatty acids than were white males. Age was also a factor. A greater proportion of people 65–74 years of age derived 12 percent or less of their calories from saturated fat than younger people.

Cholesterol

NFS data indicate that cholesterol available from food is about the same today as it was in the early part of this century, but it is about 10 percent lower than the level available during the late forties and fifties (Friend, Page, and Marston, 1979).

HANES-I data indicate a mean per capita intake of cholesterol about 25 percent lower than that available as estimated from NFS data. This suggests that at least part of the dietary cholesterol available is not being eaten.

Sources of available dietary cholesterol have changed based on NFS trend data. While eggs continue to supply the largest percent of cholesterol of any food group, their contribution declined 8 percent from 1909–13 to the present and 29 percent from the late forties to the present. The percent contribution to dietary cholesterol by meat and poultry has increased substantially during this century, while the amount of cholesterol from dairy products remained relatively stable (Agricultural Research Service, 1978b). Table 2 indicates that the major sources of cholesterol, according to HANES-I, are eggs (29 percent), meat and poultry (28 percent), and milk and cheese (16 percent).

The Dietary Goals recommend cholesterol consumption of about 300 milligrams (mg) a day (range of 250–350 mg). The mean per capita intake of cholesterol based on HANES-I is 366 mg per day. Fifty-nine percent of all persons (50 percent of males and 68 percent of females) reported eating food that contained 350 mg or less cholesterol on the day surveyed. Children and teenagers were more likely to have cholesterol intakes less than the upper limit of the goal (350 mg) than were adults.

Carbohydrate

Data from NFS indicate that the total carbohydrate content available per person has decreased about one-fourth since 1909–13 primarily because of a drastic reduction in use of grain products. Most of this decline occurred before the mid-1950's (Friend, Page, and Marston, 1979).

Carbohydrate intake is frequently discussed in terms of simple carbohydrate (sugar) and complex carbohydrate (starch). Simple carbohydrate is further subdivided into that which is found naturally in food (e.g., lactose in milk) and that which is refined from sugar beets and cane or processed from corn sugar, syrups, molasses, and honey.

The use of refined sugar based on NFS was lower during 1976 than the levels recorded during Prohibition and the early 1970's. Starch consumption has decreased dramatically. During 1909–13, it accounted for about 68 percent of available carbohydrate. It currently accounts for about 47 percent of available carbohydrate (Friend, Page, and Marston, 1979; Agricultural Research Service, 1975).

Friend and others (1979) point out that not only has the usage of refined sugars increased, but the pattern of use has changed. Today, use of sugar in households is less than one-half of what it was at the beginning of this century, but the use of sugar by industry in processing foods and beverages is 3 times greater. Americans may be eating more sugar than they realize, since more than two-thirds of the refined sugar used is added to foods and beverages before they enter the home. Food processors use refined sugar mainly in beverages (primarily soft drinks), cereals, and bakery products.

Table 2 shows the percent contribution of food groups to total carbohydrate intake as reported during HANES-I. Breads accounted for almost 24 percent of total carbohydrate. Although cereals contribute starch, most ready-to-eat and some cooked cereals have refined or processed sugar added. In fact, 17 percent of all refined sugar used during 1976 was used in processing bakery products and cereals (Friend, Page, and Marston, 1979). HANES-I data also indicate that fruits and vegetables accounted for 19 percent of total carbohydrate, and milk products accounted for almost 12 percent. Some products in each of these groups have refined sugar added (e.g., canned and frozen fruits and ice cream), but the amount is a small percent of the total refined sugar used (Friend, Page, and Marston, 1979). The sugar group, which includes car-

bonated beverages, jams, and candy, accounted for almost 19 percent of total carbohydrate, and dessert items accounted for almost 11 percent. The sugar group includes primarily refined sugar, while the dessert group includes some starch as well as refined sugar.

Based on data from HANES-I, the frequency with which many of these foods were eaten is related to the age of the individual (NCHS, 1979). The consumption of desserts was related to age. The frequency of eating desserts decreased as age increased. Children and teenagers were more likely to eat desserts and candy and to eat them more frequently than adults. Carbonated beverages were consumed more frequently by teenagers and adults 18–44 years of age than by adults over 44 years of age. This analysis indicates that children, teenagers, and to some extent young adults are the largest consumers of products high in refined sugars.

The Dietary Goals recommend an increase in consumption of complex carbohydrate and naturally occurring sugar to about 48 percent of energy intake and a decrease in consumption of refined and processed sugars to about 10 percent of total energy intake (U.S. Senate Select Committee, 1977b). Based on NFS, only 28 percent of food energy is available from naturally occurring sugars and complex carbohydrate (table 1). This is far less than recommended by the Goals. Refined sugars accounted for 18 percent of available calories. Although some individuals may have diets with no more than 10 percent of calories from refined and processed sugars, many individuals—particularly children, teens, and young adults—are probably eating foods considerably higher in refined and processed sugars than that which is recommended.

Protein

The Dietary Goals recommended maintaining the current level of protein intake. This was assumed to be 12 percent of calories based on NFS data (U.S. Senate Select Committee on Nutrition and Human Needs, 1977b). HANES-I data indicate that mean protein intakes were higher (16 percent of calories) than suggested by the Dietary Goals (table 1). The 12-percent recommendation may not be appropriate when individual intakes are compared with the Dietary Goals if the protein levels are to remain constant. A change in the recommendations for protein would mean that the recommendations for fat and carbohydrate would need to be adjusted.

Sodium

Based on NFS, the available sodium has increased about 14 percent since the first part of the century, equaling about 1.4 grams available per person per day (Friend, Page, and Marston, 1979). The level of sodium in NFS represents sodium that is found naturally in food plus that which is added during processing canned vegetables, cheese, and cured meats.

HANES-I estimates of sodium intake are substantially higher (2.2 grams of sodium per person per day) than that indicated by NFS data because HANES-I data include much of the sodium added to food during any processing. However, sodium that might be added as salt, monosodium glutamate, or soy sauce to vegetables, meat, and pastas during cooking or at the table is not included. Thus, HANES-I also underestimates sodium intake unless an individual uses no salt or other high sodium seasoning while cooking or eating.

The Dietary Goals recommended a salt intake[6] of about 5 grams per day (U.S. Senate Select Committee, 1977b). As mentiond before, this level was intended to be a recommended limit for added salt; it did not include salt that occurs naturally in foods (American Dietetic Association, 1979). The naturally occurring sodium in products such as meat, vegetables, and milk equals about 1–3 grams of salt per day, so a level of 6–8 grams of total salt (both naturally occurring and salt added during processing or while eating) would meet the Dietary Goals.

Estimating actual salt intake is difficult because it is added by individuals in varying amounts while cooking or eating. Although HANES-I data do not include salt added while cooking or eating, the estimates do include sodium in commercially prepared foods. The sodium intakes as converted to salt for HANES-I data indicated a mean intake of about 5.6 grams of salt per person during a 24-hour period. Therefore, many people may have had a salt intake within the limits recommended by the Dietary Goals as long as they did not use salt or products containing salt while cooking or eating.

Recommended changes in U.S. diet

In addition to the Dietary Goals, the U.S. Senate Select Committee (1977b) proposed a number of changes in food selection and preparation patterns of Americans which would help meet the Goals:

- Increase consumption of fruits and vegetables and whole grains.
- Decrease consumption of refined and other processed sugars and foods high in such sugars.
- Decrease consumption of foods high in total fat, and partially replace saturated fats, whether obtained from animal or vegetable sources, with polyunsaturated fats.
- Decrease consumption of animal fat; choose meats, poultry, and fish that will reduce saturated fat intake.
- Except for young children, substitute lowfat and nonfat milk for whole milk and lowfat dairy products for high fat dairy products.
- Decrease consumption of butterfat, eggs, and other high cholesterol sources. Some consideration should be given to easing the cholesterol goal for premenopausal women, young children, and the elderly in order to obtain the nutritional benefits of eggs in the diet.

[6] See footnote 4.

• Decrease consumption of salt and foods high in salt content.

In *Healthy People, The Surgeon General's Report on Health Promotion and Disease Prevention* it is stated that "Americans would probably be healthier, as a whole, if they consumed:

• Only sufficient calories to meet body needs and maintain desirable weight (fewer calories if overweight);

• Less saturated fat and cholesterol;

• Less salt;

• Less sugar;

• Relatively more complex carbohydrates such as whole grains, cereals, fruits and vegetables; and

• Relatively more fish, poultry, legumes (e.g., beans, peas, peanuts), and less red meat" (Office of the Assistant Secretary for Health and Surgeon General, 1979).

This chapter has emphasized food components that have been implicated as factors in the development of chronic diseases. The suggested changes in food selection stress these components.

Foods also contain vitamins and minerals that are essential for normal growth and maintenance of health. The Recommended Dietary Allowances (RDA) of the Food and Nutrition Board (1974) recommends levels of nutrients necessary for maintaining and promoting health.

Current diet patterns are influenced by preference and perhaps to some extent by information. For example, the change in consumption of eggs and butter during the last decade may have been in response to concern about the suspected relationship between dietary cholesterol and coronary heart disease. At the same time, beef consumption, another source of dietary cholesterol, has increased. This may indicate that Americans in general are making selective changes in their diet patterns, with some moving in a direction toward the recommendations and others not.

The decision to use or not use the Dietary Goals, the Surgeon General's recommendations, and RDA in planning diets is an individual matter. The Food and Drug Administration, U.S. Department of Agriculture, and the Federal Trade Commission are cooperating to improve the format for food labels and the guidelines for nutrition labels. These improvements will give the consumer more complete information on ingredients and nutrients in various foods. In addition, along with the National Institutes of Health these agencies and other groups are developing and expanding efforts to meet current and future concerns and demands for information about the relationships between and among food, nutrition, and health.

Summary

The Dietary Goals were developed from testimony by physicians, nutritionists, and scientists before the U.S. Senate Select Committee on Nutrition and Human Needs in 1977. According to this testimony, changes in the average U.S. diet during this century have amounted to a wave of malnutrition (from both overconsumption and underconsumption) that could damage health by being a causal factor in hypertension and chronic diseases, such as coronary heart disease, diabetes, and cancer. The Goals sparked immediate controversy and were revised in order to meet some of the concerns expressed in subsequent public hearings. This revision did not completely satisfy the critics of the Goals who believed that evidence was not sufficient to recommend changes in the diets of those Americans who show no signs of hypertension or chronic disease. However, according to the Surgeon General's report, current evidence is sufficient in some areas to recommend dietary change. The relationship between diet and chronic diseases as reviewed in this paper ranges from highly speculative to fairly definitive, and all evidence is subject to differing interpretations. Further research will be necessary to conclusively link diet with many of the current public health concerns.

Data on the current diet pattern of the average person living in the United States comes from several sources. Data from two of these sources are reviewed and compared with the recommended intakes suggested by the Dietary Goals. The data indicate that fat consumption has increased during this century, but individuals appear to be consuming a smaller portion of what is available by discarding a large proportion of visible fat on meat and some fat drippings. On the average, fat contributes an amount well above the percent of calories recommended by the Goals. However, about one-third of the population consumed less than the maximum recommended by the Goals. Cholesterol consumption is decreasing and a large proportion of individuals—particularly children, teenagers, and the elderly—reported intakes containing less cholesterol than the maximum recommended level. The consumption of eggs, the major source of dietary cholesterol, has decreased markedly in the last 25 years, and this decrease appears to be continuing. However, meat consumption continues to increase.

Total carbohydrate consumption has decreased markedly during this century, the decrease coming primarily from a drastic decrease in the consumption of starch. The consumption of refined sugars, however, has increased since the turn of the century, although there is a hint of a recent decline. Children, teenagers, and perhaps young adults are among the largest consumers of refined sugar.

It appears that a substantial proportion of persons could meet the levels of sodium recommended by the Dietary Goals if they avoided highly salted foods, use of the salt shaker, and sodium-containing condiments while cooking or eating.

Current diet patterns in general do not meet the Dietary Goals. The decision to use or not use the recommendations discussed in planning diets is, of course, an individual decision. Currently, efforts by both government and

nongovernment groups are being made to improve food label and dietary guidance information so that the consumer can make informed choices for adequate food and nutrient intake.

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Table 1. Percent distribution of sources of food energy (calories), according to selected measures and the Dietary Goals: United States

(Data are based on multiple sources)

Source of food energy	Individual intake HANES 1971-74	National food supply 1973	Dietary Goals
	Percent distribution		
Total	100	100	100
Fat	38	42	30
Saturated	14	16	10
Monounsaturated	[1]14	19	10
Polyunsaturated	[2]4	7	10
Unspecified mono- and polyunsaturated	6	...	...
Protein	16	12	12
Carbohydrate	45	46	58
Complex	45	22	48
Naturally occurring sugars[3]		6	
Refined and processed sugars[3]		18	10

[1]Represents only oleic acid.
[2]Represents only linoleic acid.
[3]Naturally occurring sugars are defined as indigenous to a food as opposed to refined (cane and beet) sugar and processed (corn sugar, syrups, molasses, and honey) sugars which may be added to a product.

SOURCES: Abraham, S., and Carroll, M.: Food Consumption Patterns in the United States and their Potential Impact on the Decline in Coronary Heart Disease Mortality. Paper presented to the Conference on the Decline in Coronary Heart Disease Mortality, Bethesda, Md., Oct. 1978; Friend, B.: Changes in Nutrients in the U.S. Diet Caused by Alterations in Food Intake Patterns. Paper presented to Changing Food Supply in America Conference, Washington, D.C., May 1974; U.S. Senate Select Committee on Nutrition and Human Needs: Dietary Goals for the United States, 2nd ed. Washington. U.S. Government Printing Office, Dec. 1977.

Table 2. Percent distribution of food groups, according to nutrient intake for people 1-74 years of age: United States, 1971-74

(Data are based on physical examinations of a sample of the civilian noninstitutionalized population)

Food groups	Calories	Protein	Fat	Carbohydrate	Sodium	Saturated fatty acid	Oleic acid	Linoleic acid	Cholesterol
	Percent distribution								
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Skim and buttermilk	1.2	2.6	0.4	1.3	1.3	0.1	0.1	-	0.2
Cheese and cheese products	1.9	3.6	3.4	0.2	4.2	4.9	2.9	0.9	2.4
Milk and milk products other than cheese	12.9	16.2	15.6	10.0	8.3	23.9	12.5	0.0	13.7
Meat	13.6	29.6	22.5	0.3	7.9	26.5	25.5	7.1	23.2
Poultry	1.5	5.1	3.7	-	0.2	2.0	3.3	12.9	2.9
Organ meats	0.2	0.6	0.3	-	0.1	0.3	0.4	0.2	1.9
Fish and shellfish	1.3	4.0	1.4	0.3	0.7	1.0	1.3	2.0	2.9
Eggs	2.2	3.6	3.9	0.1	2.9	3.6	4.2	2.4	29.1
Soups, gravies, etc.	1.4	0.9	1.8	1.3	8.1	1.7	1.7	2.4	0.5
Fats and oils	6.3	2.0	15.4	0.6	6.3	12.4	15.4	35.8	3.7
Legumes	2.2	3.0	2.2	2.0	4.0	1.7	2.3	2.5	5.9
Breads	15.1	11.2	6.6	23.6	24.0	4.9	8.6	5.0	3.7
Cereals	1.8	1.2	0.4	3.4	3.4	0.1	0.1	0.4	0.0
Fruits and vegetables	10.8	5.2	5.1	19.1	7.7	3.3	3.5	10.2	1.1
Sugar and sugar products	8.8	0.7	1.8	18.5	0.5	1.9	2.2	1.5	0.1
Desserts	8.0	2.7	7.7	10.8	6.1	4.7	8.4	5.6	4.2
Mixed protein dishes	4.9	[illegible]	5.1	4.3	11.5	5.2	6.1	1.8	4.3
Alcoholic beverages	3.3	0.[illegible]	-	1.8	0.3	-	-	-	-
Sugar free beverages	0.4	0.1	-	0.2	0.6	-	-	-	0.1
Salty snacks	1.5	0.5	2.2	1.3	1.5	1.6	1.4	8.2	0.0
Other	0.5	0.4	0.3	0.9	0.2	0.1	0.1	1.1	0.0

SOURCE: Abraham, S., and Carroll, M.D.: Fats, Cholesterol, and Sodium Intake in the Diet, United States. Paper presented to the Symposia in Agricultural Research, Beltsville, Md., May 1979.

CHAPTER III

Current Status and Future Prospects of Nonphysician Health Care Providers[a]

Introduction

During the past decade, the number of active physicians in the United States increased at a rate that outpaced population growth. In fact, Health Resources Administration estimates indicate that the overall supply of physicians may be greater than needed by the year 1990 (Simpson, 1978). Despite this, certain segments of the population—primarily those living in inner-city poverty areas or in rural areas—still have difficulty obtaining adequate primary medical care. According to a Health Resources Administration report, more than 1,000 primary care shortage areas were designated in August 1978 (Division of Manpower Analysis, 1978). About three-fourths of these areas were rural, and the remaining areas were urban. The same report estimated that more than 7,000 primary care physicians would be needed to provide adequate primary care in these areas.

Evidence indicates that the problem caused by maldistribution is serious because large numbers of recent medical school graduates gravitate toward the larger hospitals in areas with greater population density (Sorkin, 1977). Attempting to improve access to health care in physician-shortage areas while containing the costs of care has led to an increasing focus on the training of nonphysician health care providers. "Nonphysician health care providers" are individuals who have been trained to perform services that traditionally have been performed only by physicians, such as taking a complete medical history or performing a routine physical examination. These providers generally can be trained more quickly and less expensively than physicians, and they may locate more readily in areas where physician shortages have been persistent.

Substantial Federal support has been given to the training of primary care nonphysician providers. The two broad types of nonphysician health care providers especially significant in primary care are as follows: nurse practitioners (NP's) and other nurses who have been trained to operate in expanded nursing roles that include both traditional nursing functions and services traditionally provided only by the physician; physician's assistants (PA's) and other individuals, with or without previous health care experience or training, who have been trained to assist physicians in their medical care activities. The primary distinction between NP's and PA's is that NP's may perform medical functions in addition to nursing functions because their practice is an extension of the nursing role. PA's, on the other hand, are trained solely to assist or substitute for the physician in the performance of medical tasks. In spite of these differences in orientation, both NP's and PA's can supplement physicians in the delivery of health care.

This chapter emphasizes the contribution that nonphysician providers can make in reducing problems caused by physician maldistribution. However, many nonphysicians do not see themselves as substitutes for physicians. Instead, they see themselves as members of a health care team in which they function in collaboration with the physician and other health professionals. Although they perform certain medical functions (diagnosis and treatment) also performed by the physician, they act in a role that is complementary to that of the physician. In this complementary role, they may provide counseling, guidance, emotional support, patient education, and coordination of health and social service resources. NP's in particular, often stress the complementary aspect of their role. While the emphasis in this chapter is on increasing access to care, it is important to bear in mind that nonphysician providers often contribute services that improve quality of care in areas where physician shortages do not exist.

Background

Annual Federal expenditures for NP and PA training programs increased from less than $1 million in fiscal year 1969 to more than $21 million in fiscal year 1979 (Congressional Budget Office, 1979). This represents a substantial

[a] Prepared by Jacqueline Wallen, Ph.D., Division of Intramural Research, National Center for Health Services Research.

NOTE: The term "nonphysician health care provider" can be applied to many types of health professionals. Here it is used to refer to nurse practitioners (and other nurses in expanded roles) and physician's assistants.

Federal commitment to a kind of health care provider that came into being little more than a decade ago.[1]

The first NP training program—one for pediatric nurse practitioners—began at the University of Colorado in 1965. During the same year, the first PA program was initiated at Duke University. Both were sponsored by the private sector. Federal funding was provided in 1969 for support of the first MEDEX[2] program at the University of Washington. The objective of the MEDEX program was to train PA's who would be placed with physicians practicing primary care in underserved rural or urban areas.

In 1971, the use of NP's and PA's to improve access to and contain costs of health care was endorsed in the President's Annual Message on Health. In 1974, the Nurse Training Act (P.L. 94-63) provided funds for increased training of nurse practitioners, and the Comprehensive Health Manpower Training Act (P.L. 92-157) provided funds for increased training of both NP's and PA's. Support for NP training was extended in the Nurse Training Act of 1975.

In 1977, the 1976 Health Professions Educational Assistance Act (P.L. 94-484) was amended by the Health Services Extension Act (P.L. 95-83). This act provided that special consideration be given to programs training NP's who would practice in health manpower shortage areas, and it added "traineeships to train nurse practitioners who are residents of a health manpower shortage area and who make a commitment to practice in such an area" (U.S. Congress, 1978).

Additional support for employment of nonphysicians in physician-shortage areas was given by the Rural Health Clinic Services Act of 1977 (P.L. 95-210). Traditionally, third-party payers have not allowed reimbursement for physician services delivered by NP's or PA's. This act, however, provided Medicare and Medicaid coverage for medical services furnished by a qualified NP or PA when such services are rendered in certified clinics located in rural physician-shortage areas.

Constraints on the utilization of nonphysician providers still exist, and these will be discussed. Continuing limitations on the extent to which nonphysician services are reimbursed by third-party payers and legal restrictions on the scope and independence of nonphysicians' practice are among the most important of these constraints.

Manpower supply and characteristics

Current supply and distribution

Table A shows estimates of the numbers of NP's and PA's in 1979. Approximately 60 percent of NP's with master's degrees and 90 percent of those with certificates were trained in primary care specialties, depending upon the kind of training program in which they participated. Comparable figures concerning training are not available for PA's, but approximately 70-80 percent of PA's studied by Scheffler (1978) were employed by primary care physicians. NP's and PA's are relatively young as a group—early to mid-thirties—and most are white. Most NP's are women, and most PA's are men.

Findings synthesized from two large-scale studies of nonphysician providers indicate that the majority of all types of nonphysician providers are employed in primary care settings; however, there are significant differences among PA's, NP's, and MEDEX in the work settings they select (National Center for Health Services Research, 1977). Differences in geographic distribution were evident among the three groups. More than half of NP's were employed in standard metropolitan statistical areas (SMSA's) exceeding 1 million population, compared with a third of PA's and a sixth of MEDEX. Employment in rural areas (counties with populations less than 50,000 and outside SMSA's) was high for MEDEX (37 percent), moderate for PA's and NP's with certificates (18 percent), and low for NP's with master's degrees (5 percent). However, many of the providers employed in large urban areas may work in central cities with disadvantaged populations. In general, NP's and PA's are more likely than physicians to locate in rural and low-income areas (Morris and Smith, 1977; Perry, 1978). It seems probable that enhanced legal authorization, increased independence, and more liberal reimbursement policies for nonphysician providers might encourage a greater number of these providers to locate in physician-shortage areas.

Table A. Nonphysician health care providers, according to selected characteristics: United States, 1979

Characteristic	Nurse practitioner		Physician's assistant	MEDEX
	Certificate	Master's degree		
Total[1]	16,240		8,000	
	Percent			
Primary care[2]	89	64	69	82
Female	98	98	21	12
Other than white	12	6	13	17
	Age in years			
Average age	36	32	32	32

[1] Estimated number.

[2] Includes pediatrics, family practice, general practice, and internal medicine.

NOTE: Includes nonphysician providers not currently employed.

SOURCES: Scheffler, R.M.: *The Supply and Demand for New Health Professionals, Physician's Assistants and MEDEX*. Contract No. HRA-1-44184, Bureau of Health Manpower, Health Resources Administration. Hyattsville, Md. 1978; Sultz, H.A., et al.: Longitudinal Study of Nurse Practitioners, Phase III. To be published; Personal communication from Division of Nursing, Bureau of Health Manpower.

[1] Formally trained nurse-midwives, who are nurses functioning in expanded roles, have practiced in this country since the 1930's. Legal recognition of their role, however, has become more widespread in the past decade.

[2] MEDEX is a physician assistant trained in a special program emphasizing student preceptorships with rural physicians. The term MEDEX is a contraction of the term "medicine extension," derived from the French phrase for physician extenders.

Table B. Estimates and projections of nonphysician health care providers: United States, 1977, 1980, and 1990

Year	Total	Type of provider	
		Nurse practitioner	Physician's assistant
1977	17,280	12,280	5,000
1980	27,720	18,220	9,500
1990	62,520	38,020	24,500

NOTE: Projections assume no change in the number of yearly graduates from nurse practitioner and physician's assistant training programs. Includes nonphysician providers not currently employed.

SOURCES: Light, J.A., Crain, M.J., and Fisher, D.W.: Physician assistant, a profile of the profession, 1976. *The PA Journal* 7(3):109-123, Fall 1977; Sultz, H.A., et al.: Longitudinal Study of Nurse Practitioners, Phase III. To be published; Personal communication from Division of Nursing, Bureau of Health Manpower.

Manpower supply projections

Table B shows projected numbers of NP's and PA's for 1980 and 1990, assuming that there is no change in numbers of yearly graduates of training programs. The total number of these providers in 1990 will be approximately 62,520 if the number of yearly graduates remains constant. Of course, higher levels of Federal funding could result in a still larger supply of nonphysician providers in the year 1990 but only if the appropriate training capacity could be activated for qualified applicants. Appropriate training would include the establishment of new educational programs, clinical practice settings, and preceptorships as well as a sufficient number of qualified faculty. However, it is possible that an increase in the total number of physicians could lead to a decrease in funds allocated to nonphysician training or to more resistance to NP and PA practice.

Training programs

Duration and content

Although similarities exist among training programs, there is no single standard for NP and PA curricula. Data concerning NP and PA training programs for 44 sites funded by the U.S. Department of Health, Education, and Welfare (DHEW) in 1976 show wide variations in duration and content (National Center for Health Services Research, 1977). NP master's degree programs ranged from 44 to 72 weeks, the average being 60 weeks. NP certificate programs ranged from 16 to 68 weeks, the average being 41 weeks. PA programs ranged from 48 to 104 weeks, and MEDEX from 61 to 72 weeks. These figures included both course work and preceptorships, when the latter was required as a part of the course structure. The NP master's degree programs and three of the PA programs did not include formal preceptorships.

With respect to the content of the training programs (National Center for Health Services Research, 1977):

- PA and MEDEX programs placed much greater emphasis than NP programs on basic sciences, particularly biology and physiology. (Registered nurses receive similar basic courses during nurse's training.)
- PA programs included surgery and emergency care skills in their training, skills rarely emphasized in NP programs.
- NP programs placed greater emphasis (as measured by total curriculum hours) on provider-patient communications and counseling than did PA and MEDEX programs.
- NP master's degree programs heavily emphasized research methodology, which was rarely presented in the other training programs.

Funding

As table C shows, 250 programs exist for training NP's and PA's, but not all of them emphasize primary care. The table also shows the number of yearly graduates of these programs and the proportion of NP and PA programs that receive funding from DHEW.

It is important to remember that programs funded by DHEW generally receive only partial support. In 1976, for example, DHEW grants accounted for 55–72 percent of the total funding of programs that received DHEW support; the institutions sponsoring these training programs provided 26–45 percent (National Center for Health Services Research, 1977). A substantial number of training programs receive no Federal funding at all; they are funded through institutional and foundation sources. Other Federal funds and tuition account for only a very small percent of funding.

Table C. Training programs for nonphysician health care providers, yearly graduates, and percent of programs funded by Department of Health, Education, and Welfare, according to type of provider: United States, 1977

Program, graduates, and funding	Type of provider		
	Nurse practitioner		Physician's assistant
	Certificate	Master's degree	
Number of training programs	124	74	52
Number of yearly graduates	1,240	740	1,500
Percent funded by Department of Health, Education, and Welfare	69	39	88

SOURCE: Division of Nursing, Bureau of Health Manpower: Personal communication on nurse practitioners; Division of Medicine, Bureau of Health Manpower: Personal communication on physician's assistants.

DHEW funding for NP programs has, until recently, been increasing over time. In 1977, DHEW awarded approximately $9 million in training grants to NP training programs; in 1978, that figure rose to almost $12 million (Division of Nursing, 1979). Now, like funding for PA programs, the funding of NP programs appears to have leveled off. In both 1977 and 1978, DHEW awarded $9 million to PA programs (Division of Medicine, 1979).

Certification, licensure, and accreditation

Figure 1 shows the requirements for licensure and certification of nonphysician providers as well as mechanisms for accreditation of training programs. Certification refers to acknowledgment by the professional association that the provider is competent to practice; licensure refers to the process by which the State entitles the individual to practice. Accreditation refers to acknowledgment by a recognized body that the training institution offers legitimate training programs.

As figure 1 shows, the procedures for licensure, certification, and accreditation vary according to the type of nonphysician provider. State licensing procedures are very different, even for similar kinds of providers. In addition, State laws are changing, and several State are revising their procedures with assistance from the various professional groups. Such revision often involves extensive negotiations between, among, and within these groups to determine appropriate areas of responsibility for each type of nonphysician provider.

Figure 1. Requirements for certification, licensure, and accreditation for nonphysician health care providers, and training programs, according to type of provider

Type of provider	*Requirements*		
	Certification of provider	*Licensure of provider*	*Accreditation of training program*
Nurse practitioner (general)	American Nurses Association certifies. License and 2 years of practice required for certification, but certification is not required in most States.	No mechanism for licensure as nurse practitioner—registered nurse license is obtained prior to nurse practitioner training. Some States require certification by State board of nursing and/or medicine.	American Nurses Association is responsible for accreditation at the certificate level and the National League for Nurses at the master's degree level.
Pediatric nurse practitioner	American Nurses Association certifies. License and 2 years of practice required for certification, but certification is not required in most States. The National Board of Pediatric Nurse Practitioners and Associates provides voluntary certification on the basis of a beginning competency exam.	No mechanism for licensure as pediatric nurse practitioner—registered nurse license is obtained prior to nurse practitioner training. Some States require certification by State board of nursing and/or medicine.	Accreditation is not required. Programs can voluntarily seek approval from the American Nurses Association (certificate level) or the National League for Nurses (master's degree) is responsible for accreditation at the certificate level.
Nurse-midwife	American Nurses Association certifies. License and 2 years of practice required. An American College of Nurse-Midwives certification examination is given after the completion of an accredited program.	No mechanism for licensure as a nurse-midwife—registered nurse licensure is obtained prior to nurse-midwife training. American College of Nurse-Midwives certification is required in most States.	American College of Nurse-Midwives. Programs can also seek National League for Nurses approval at the master's degree level, but it is not required.
Physician's assistant, MEDEX, child health associate	National Board of Medical Examiners certification necessary to practice.	State licensing criteria vary, although certification is required by most States. Regulatory agencies also vary, although the Board of Medical Examiners is most frequently designated.	American Medical Association, Council on Medical Education is responsible for program accreditation.

SOURCE: Division of Nursing, Bureau of Health Manpower: Personal communication, 1979.

Roles of nonphysician providers in primary care

Functions

Delegation of physician tasks, both formal and informal, has always existed to some degree within medical practice. However, "traditional medical delegation has not included even the most simple, routine medical acts. Physical examination, medical history, diagnosis and treatment of common illnesses, minor surgery, and decisions to continue or modify prescribed treatment for convalescing or chronically ill patients generally have not been delegated" (Kissam, 1977).

The current emphasis on training NP's and PA's to assume physician tasks represents a shift in attitudes toward medical delegation. As Bliss and Cohen (1977) noted, "These nonphysician providers are taught to elicit a complete history and perform a routine physical examination on all types and ages of patients. Additionally, they can order diagnostic procedures, can interpret results, and isolate abnormalities. They are also trained to carry out specific medical regimens under physician direction and take necessary, immediate action to preserve life in emergency situations. Some are trained to perform minor surgical services, such as the removal of a foreign object from the eye or minor suturing."

The total range of services offered by NP's and PA's is great. However, the services they perform depend a great deal on the nature of the practice setting in which they work and the kinds of patients that they see. Experiments have been conducted in an attempt to establish the maximum number of services that can be delegated to nonphysician providers without compromising the quality of care (Bureau of Health Manpower, 1978). Results from these experiments show that the majority of adult ambulatory care office visits can be safely delegated to a nonphysician provider.

In the triaging model used at Kaiser-Permanente and documented by Dr. Jane Cassels Record and her colleagues, it is assumed that the nonphysician provider (PA, in this case) can manage all patient visits unless there are indications to the contrary. Indications to the contrary include:

- Presence of a "red flag" complaint (i.e., life threatening, high risk of missed diagnosis with serious consequences, high risk of rapid deterioration with serious consequences, or case management too difficult for a PA).
- Presence of certain previously diagnosed chronic diseases or conditions.
- Application of the "third-visit rule," which specifies that no patient is to be seen three times by a PA for the same general illness without a physician visit.

If none of these conditions exists and if the patient does not request to see a physician, the patient is seen by a PA. At Kaiser-Permanente, the triaging model has resulted in the delegation of approximately 80 percent of adult ambulatory care office visits to nonphysicians (Bureau of Health Manpower, 1978). Although these "outer limits" of delegation have rarely been approached in other settings, the documentation by Record and her colleagues suggests that these limits can be reached without detracting from the quality of care.

In pediatrics, the emphasis for the nonphysician provider tends to be on well-child care and the management of mild acute illnesses in otherwise healthy children. Sultz and his colleagues (Bureau of Health Manpower, 1976) surveyed 99 programs (66 certificate and 33 master's degree) preparing NP's in infant and child health care. The majority of these programs prepared students to render the following services to well children and to children with mild chronic or acute illnesses: obtain or update a social or family history, obtain or update a health history, perform a physical exam, order lab tests or other diagnostic procedures, decide whether to manage a patient or refer the patient to a physician, and initiate teaching and counseling. Most of the programs also prepared students to assume the overall health care management of well children and children with mild acute illnesses. Only about half of the programs prepared students to assume the health care management of children with mild chronic diseases. This is consistent with pediatricians' attitudes that nonphysicians in pediatrics should be responsible primarily for healthy children.

The American Academy of Pediatrics surveyed a random sample of its members in 1978 (Burnett and Bell, 1978). Of the 1,604 pediatricians who returned the questionnaire (80 percent of those to whom it had been sent), 164 employed pediatric nurse practitioners (PNP's) and tended to favor the delegation of well-child care and the management of minor illnesses. Only 34 percent favored delegating physical examinations of children with chronic illnesses, and still fewer (26 percent) favored delegating continuous management of children with chronic illnesses.

Child health associates (PA's with training in pediatrics) are also expected to confine their practice to the care of well children as opposed to the care of children with severe or chronic illnesses (Silver and Hecker, 1970).

Smith (1973) reviewed the literature on nonphysician providers in pediatrics. He observed that a number of studies of pediatric practices found that pediatricians saw a large number of well patients and spent at least 80 percent of their time either in well care or in treating minor illnesses. This means that even if nonphysician providers were limited to well-child care and care of minor illnesses, 80 percent of pediatricians visits could be delegated. If nonphysician providers also managed certain chronic illnesses, the percent of delegated visits would be even higher.

Nurse-midwives, who care primarily for healthy women in their childbearing years, also emphasize the care of well, rather than ill, patients. The American College of Nurse-Midwives (ACNM) defines nurse-midwifery as "the independent management and care of essentially normal newborns and women antepartally, intrapartally, postpar-

tally, and/or gynecologically, occurring within a health care system that provides for medical consultation, collaborative management, or referral . . ." (American College of Nurse-Midwives, 1978).

Although nurse-midwives are trained to care for the newborn, most provide only immediate care to the newborn. In its 1978 report, "Nurse Midwifery in the United States, 1976-1977," ACNM noted that "in most of their work settings, nurse-midwives' contributions to infant care are directed predominantly at education and support of mothers" (American College of Nurse-Midwives, 1978).

The authors suggested that the distinction made in the hospital setting between obstetrical care, which ends after the infant's birth, and gynecological care (for the mother) and pediatric care (for the baby), which begin after the infant's birth, may partly account for the nurse-midwife's limited participation in the care of the newborn. In nonhospital settings where continuity of care is stressed (e.g., nurse-midwife services or private practices), nurse-midwives are likely to assume responsibility for *both* the mother and the baby during the first post partum days.

As care is currently structured, the primary focus of the nurse-midwife is on the mother. Of the nurse-midwives in clinical practice surveyed by ACNM, more than three-fourths (from 76 to 95 percent, depending on the general task) managed patient care prenatally, in labor and delivery, and post partum. They also conducted the 4–6 week post partum examination. With respect to family planning services, almost all of the nurse-midwives prescribed and supervised oral contraception, and three-quarters of them inserted intrauterine devices (American College of Nurse-Midwives, 1978). Respondents to the ACNM survey diagnosed a wide range of conditions but were less likely to treat than to diagnose these conditions. Again, this distinction between diagnosis and treatment is consistent with the view that the nurse-midwife is responsible for care of well patients rather than ill ones.

Although most of the work of nonphysician health care providers involves routine health care and the care of mild acute illnesses or injuries in essentially healthy patients, they can also care for seriously or chronically ill patients. Friedman (1978) cites a study carried out by the American Hospital Association in 1976. In this survey, 5,734 hospitals were questioned about nonphysician providers. It was found that PA's were practicing in 20 percent of the reporting institutions, and NP's were practicing in 11 percent of them. Many of these nonphysician health care providers were providing primary care services in hospital clinics, but others were working with seriously ill patients, as surgical assistants, and in long-term care of chronically ill patients.

Accountability

NP's and PA's perform medical acts under physician supervision. The identified physician supervisor is then legally responsible. However, State requirements for physician supervision vary widely. In States where these requirements are specified, they range from continuous physician presence to communication by telephone, adherence to a protocol, availability of a plan for emergencies, or physician review of charts.

Physician accountability and physician supervision in some form are always required for NP's and PA's when they are actually performing tasks traditionally performed by the physician. However, a small number of PA's (16 percent) and an even smaller number of NP's (12 percent) deliver primary care in remote or "satellite" clinics where continuous, direct physician supervision may be difficult or impractical to achieve (Light, Crain, and Fisher, 1977; Bureau of Health Manpower, 1976). Physician supervision under these circumstances may be maintained through various combinations of telephone contacts, standing orders, protocols, periodic physician visits, or chart reviews.

Through evaluations of practices in such sites, it has been found that nonphysician providers do operate "in the appropriate dependency relationship with the physician, consulting or referring on all but routine medical problems" (Hill, Holcomb, and Wert, 1975). It was also found that these providers can manage a large proportion of patient complaints without consulting a physician (Kirk et al., 1971).

As the degree of physician supervision required for nonphysician providers varies from State to State, so do the specific tasks that they are permitted to perform. Miller and Byrne (1978) recently analyzed legislation regarding NP's and PA's in depth. They reported that NP's, unlike PA's, are able to practice in some States without significant change in regulatory statutes. In these States, NP's perform in an expanded role that is an extension of the nursing role already defined by Nurse Practice Acts for many years. As of 1975, 30 States had enacted amendments to their Nurse Practice Acts that allowed nurses to perform diagnostic and treatment functions. In contrast, the role of the PA is entirely new and requires enabling legislation. By 1976, 37 States recognized PA's as dependent providers of medical services under the supervision of licensed physicians. The regulation of NP's and PA's is constantly changing as State legislatures and regulatory agencies respond to changes in Federal reimbursement policy and in definitions of the responsibilities of these providers (Miller and Byrne, 1978).

A legal problem particularly important to rural health clinics involves prescription writing. A number of States explicitly prohibit the writing of prescriptions by PA's; others prohibit it for both NP's and PA's; still others place certain limits on the writing of prescriptions by nonphysicians (Miller and Byrne, 1978). In clinics where the physician is not present at all times to countersign prescriptions, prohibition or curtailment of prescription writing by nonphysicians may limit the extent to which they can manage the treatment of a patient.

This particular problem reflects an underlying uncertainty concerning the extent to which a nonphysician can function independently. It seems likely that some relaxation in the requirements for direct on-site, physician supervision will be necessary in many States if these providers

are to provide health care on a significant scale in physician-shortage areas.

Reimbursement

Before the passage of the 1977 Rural Health Clinic Services Act, the Social Security Administration conducted an experiment whereby some rural medical practices received reimbursement under Medicare for services supplied by NP's or PA's. An evaluation of this "Physician Extender Reimbursement Study" concluded that these practices provided "more visits per $1,000 of practice cost, at a higher quality of care, and with less charge to the patient or third-party payer than do traditional practices" (System Sciences, 1978). This positive evaluation may lead to gradual liberalization of all reimbursement policies. However, the majority of third-party payers have not yet changed their reimbursement policies.

The Rural Health Clinic Services Act of 1977 (P.L. 95-210) does indicate a shift in governmental policy toward the reimbursement of nonphysician services, especially in physician-shortage areas. The act provides Medicare and Medicaid coverage for medical services furnished by a qualified NP or PA in a certified clinic. But, the provisions of the Rural Health Clinic Services Act itself are relatively limited.

First, only rural clinics are included. During House hearings on the Rural Health Clinic Services Bill, the Department of Health, Education, and Welfare recommended that reimbursement be extended to clinics staffed by nonphysician providers in medically underserved urban areas (U.S. Congress, 1977). The act provided for the initiation of a "Physician Extender Reimbursement Study" of urban practices to be completed by 1981. Reimbursement of nonphysician services in urban clinics will require further legislation.

Second, only clinics without a full-time physician are included. Only 16 percent of PA's (Light, Crain, and Fisher, 1977) and 12 percent of NP's (Bureau of Health Manpower, 1976) practice in setting where physician supervision is indirect. During the House hearings, the Department of Health, Education, and Welfare also recommended that coverage be extended to clinics in underserved areas that had a full-time physician on the premises. Physician-directed clinics in medically underserved rural and urban areas will be included in the second reimbursement study, but again, reimbursement of nonphysician services in physician-directed clinics will require further legislation.

Third, only clinics employing "primary care practitioners" are covered. A primary care practitioner is defined as a "nurse practitioner or a physician assistant who performs such services as he (sic) is legally authorized to perform" (U.S. Congress, 1977). According to current interpretation by the Health Care Financing Administration, nurse-midwives are not included as primary care practitioners because they are perceived as providing "episodic" as opposed to "primary" care. While the presence of an NP or PA on the staff of a rural health clinic may entitle the clinic to certification so that it can receive reimbursement for nurse-midwife services, clinics staffed only by nurse-midwives are not at this time considered eligible. Since nurse-midwives can perform a significant role in reducing maternal and infant mortality in medically underserved areas, this limitation is an important one.

Fourth, reimbursement for nonphysician services is cost-related rather than charge-related. Nonphysician services under Medicare and Medicaid are reimbursed on the basis of the "reasonable cost" of the service, and physician services are reimbursed on the basis of the "prevailing charge" for the service. Reimbursement based on the reasonable cost of a service is lower than reimbursement based on the prevailing charge.

The evaluation of the initial "Physician Extender Reimbursement Study" recommends further study to determine "rates of reimbursement which provide an economic incentive to hire physician extenders and still serve the national purpose of containing medical costs and maintaining quality of care" (System Sciences, 1978).

Level of reimbursement was to have been evaluated in the study, but the researchers were unable to induce clinics to participate at anything less than the maximum reimbursement level offered. As a result, data on optimal reimbursement levels were not collected. A number of experts have theorized that the differental remuneration of physicians and nonphysicians providing the same service discourages the use of nonphysician providers (Scheffler et al., 1978; Schweitzer and Record, 1977). It provides no economic incentive for physicians to delegate services to nonphysicians or for nonphysicians to develop or seek employment in satellite clinics.

Last, legal constraints may affect the application of the act even in those clinics that might otherwise qualify. Legal constraints against the use of nonphysician providers in satellite clinics exist in a number of States.

Rural health clinics can be certified *only* if the State does not explicitly prohibit the delivery of health care by NP's or PA's. Even where State laws are congenial to changed reimbursement policies, legal ambiguities and inconsistencies may cause supervising physicians to be reluctant to work with nonphysicians.

Considerations

Quality of care

The literature assessing the quality of care rendered by NP's and PA's is extensive, but these studies tend to examine a small number of providers functioning in a limited number of settings under varying guidelines (Lawrence, 1978). It is unclear the extent to which findings from these studies can be applied to the majority of nonphysician health care providers or to a wide range of health problems. Researcher bias is a problem in a number of

studies because evaluations were often carried out by individuals involved in the program being evaluated.

Cohen and others (1974) reviewed findings concerning the quality of care rendered by nonphysician providers. They concluded that NP's and PA's were able to perform specific activities as well as the physicians with whom they were compared. Using continuity of care as one indicator of quality of care, the reviewers found evidence that the use of nonphysician health care providers resulted in continuity where care had previously been fragmented.

One of the few experimental studies covered in the review included before and after measures of the health status of patients randomly assigned to either a nurse practitioner or a physician for health care (Spitzer et al., 1974). Quality of care was further assessed by evaluating how each of the practitioners managed a series of 10 "indicator conditions" and prescribed 13 common drugs. At the end of the experimental period, the health status of patients receiving care from NP's was similar to that of patients receiving care from physicians. For 167 monitored episodes of care managed by two NP's, 69 percent were rated as adequate; for 225 episodes managed by two physicians, 61 percent received that rating. In the case of drug prescriptions, 75 percent of the 284 prescriptions by physicians were rated adequate, while 71 percent of the prescriptions by NP's were given that rating. The sobering fact is that more than 30 percent of all health care providers monitored failed to receive a rating of adequate for their management of an episode of care, and approximately 25 percent failed to receive an adequate rating for prescribing a common drug. Still, the study does support the reviewers' conclusion that the use of NP's in primary care does not detract from the quality of care provided.

Cohen and the others examined studies up to 1974. However, studies reported since the completion of their review support their conclusion that use of nonphysician providers does not compromise the quality of care. For example, a study of physician and physician assistant management of four routine problems (sinusitis, otitis media, pneumonia, and bronchitis) was carried out at Kaiser-Permanente (Record, Hurtado, and O'Bannon, 1977). It was found that PA performance compared well with physician performance in the management of these problems.

More recently, a comparison of 70 practices employing nonphysicians with 50 practices not employing nonphysicians was conducted as a part of the "Physician Extender Reimbursement Study" already mentioned (System Sciences, 1978). It was concluded that practices employing nonphysicians may provide a higher quality of care than those not employing nonphysicians. This study followed the management of a set of three "tracer" or "indicator" conditions for which diagnostic and therapeutic procedures were well established. Management of the three conditions (urinary tract infection, adult onset diabetes mellitis, and essential hypertension) received more adequate ratings in the practices employing nonphysicians than in the other practices.

Methods for measuring quality of care need further development. Also needed are further evaluations of nonphysicians managing a wide range of conditions in a variety of settings. However, the weight of existing evidence supports the view that care provided by nonphysicians for a number of routine or less complex problems compares favorably to that provided by physicians.

Patient acceptance

In a review of studies of patient acceptance, it was noted that "high acceptance is reported for nurse practitioners and physician assistants functioning at all levels of independence, delivering many types of care, functioning in all settings, and performing varied activities" (Ruby, 1977). The author cautions, however, that many studies are characterized by evaluation bias and measurement problems, and the limits of patient acceptance are not yet established. In addition, studies on patient acceptance have been short-term ones; patient acceptance over long time periods has not been studied.

A recent summary of studies of patient acceptance points to several factors influencing attitudes toward nonphysician providers (Lawrence, 1978). These are the patient's educational level, the patient's experience with the kind of nonphysician provider being studied, and the kinds of services that the provider is giving. Patients who have higher educational levels or who have previously received care from a nonphysician provider express more positive attitudes toward these practitioners than others. Patients are more likely to accept routine services, such as taking medical histories and giving physical examinations, from nonphysician providers than they are services for "worry-inducing" problems, such as chest pains or breast lumps. However, studies that take into account the various factors affecting patient acceptance and the relationships between these factors are lacking, so the process by which nonphysician providers gain or fail to gain patient acceptance is only partly understood.

Even with its deficiencies, the literature on patient acceptance supports the idea that patient attitudes are not a barrier to using nonphysician providers, especially when patients are familiar with the concept of these providers and the roles that they are qualified to perform.

Physician acceptance

A number of factors affect a physician's willingness to hire a nonphysician health care provider. One of the most important seems to be how busy a physician is and how much extra help is needed as a result. In a survey of a national probability sample of 6,092 physicians in 1976, it was found that "lack of need for any additional personnel" was given by the physicians 41 percent of the time as a reason for not wishing to employ a PA (Scheffler, 1978). In its study of pediatricians, the American Academy of Pediatrics (AAP) found that pediatricians often gave a similar explanation for not hiring pediatric nurse practitioners (PNP's) (Burnett and Bell, 1978).

Also, legal constraints and reimbursement problems may discourage a physician from hiring a nonphysician health care provider. Scheffler (1978) reported that licensure, malpractice insurance, and third-party payment problems represented 24 percent of the reasons given by physicians for not employing PA's, and lack of acceptance of PA's was an important reason 18 percent of the time. Increased professional liability premiums were mentioned in the AAP study as a disadvantage of employing PNP's. Almost three-quarters of the pediatricians surveyed thought that employing PNP's would affect their professional liability premiums (Burnett and Bell, 1978).

On the other hand, there are definite incentives to hiring nonphysician health care providers. Almost all (95 percent) of the employers of NP's questioned in one large scale study gave "improved quality of care" as a reason for hiring NP's (Bureau of Health Manpower, 1976). In a more recent study of NP and PA employers, it was found that physicians hire nonphysician health care providers to decrease work pressure, to spend time on more complex cases, and to increase the amount of patient education provided (System Sciences, 1978).

The settings (for example, solo, group, or health maintenance organization) in which physicians practice also affect their willingness to hire nonphysician providers. The AAP report noted that there was a great diversity among respondents, depending on their practice setting. When presented with a list of positive and negative statements about PNP's, solo practitioners were least likely to express a positive attitude toward these providers. Mixed-specialty group practitioners were the most positive toward PNP's, and single-specialty groups gave responses that were between the responses of the other two kinds of practitioner (Burnett and Bell, 1978). The authors of the AAP report did not offer reasons for these differences; but, it seems likely that the cost-benefit ratio for employing a nonphysician is less favorable in a small practice because the number of patients may be too few to offset the need for more office space, higher malpractice premiums, and greater demands on the physician's time to provide supervision and consultation. In large practices, relative costs may not be as high, while the number of delegable visits is probably greater. In addition, physicians in multispecialty practices may be able to practice more exclusively within their specialty because of presence of nonphysician providers. It is important to remember that only pediatricians were questioned in this study; preference patterns may be different for other specialties. Also, the literature on nonphysician providers contains many examples of successful physician-nonphysician teams in solo practice.

Even though physicians may have positive attitudes toward the nonphysicians they employ, they may not always be willing to delegate appropriate tasks. Studies show that discrepancy often exists between what physicians think can or should be delegated and what they actually do delegate. For example, in one study, internists expressed a willingness to delegate many more tasks than they did (Riddick et al., 1971). Another study showed that task delegation in orthopedics could be increased from 10 percent to perhaps 50 percent if orthopedists entrusted to nonphysicians all the tasks that they felt "could" or "should" be delegated (Division of Medicine, 1977). Similarly, in the AAP survey, pediatricians were asked to describe tasks that could be delegated under "ideal" conditions and those that were delegated under current conditions. Pediatricians who employed PNP's and pediatricians who did not employ them both indicated that they would delegate more tasks under ideal conditions than were being delegated under current conditions.

Some reasons for physicians' reluctance to delegate have been identified. A study of a national longitudinal sample of NP's and their employers was conducted from 1973 through 1976. It was found that nearly 90 percent of the 500 primary care NP's who responded and 75 percent of the 407 employers who responded had encountered one barrier or more to "role development" of the NP in the practice setting. Specific barriers reported by 20 percent or more of the NP's and employers were legal restrictions, limitations of space and facilities, and resistance from other providers (Sullivan et al., 1978).

Nonphysician provider satisfaction

Another important factor in assessing the viability of nonphysician providers in primary care is whether or not qualified individuals can be attracted to and retained in this career field. Studies of national samples of PA's and NP's have found that job satisfaction for these providers is relatively high.

When scores measuring job satisfaction for PA's are compared with individuals from other occupational groups, they are most similar to those for physicians and lawyers (Perry, 1976). When asked to respond to the statement "It is one of the most satisfying careers one could follow," 81 percent of nearly 1,000 PA's questioned agreed that this statement described their career. Eighty-seven percent agreed that "My career as a physician assistant has lived up to the expectations I had before entering it."

Those characteristics that seem to be most strongly related to job satisfaction for PA's are role support by the physician, perceived career opportunities, and an adequate level of responsibility for patient care (Perry, 1976).

In a study of NP's, 92 percent expressed some degree of satisfaction with their career choice, although only 63 percent stated that they were "very satisfied" (Bureau of Health Manpower, 1976). The greatest sources of dissatisfaction were "pay and benefits," "administrative climate within setting," and "proportion of time spent on nonprofessional tasks."

The role of PA often presents an avenue of upward mobility for individuals in allied health fields or individuals from lower-middle class backgrounds, and the role of NP presents an opportunity for upward mobility within nursing. Because of this, continuing opportunities for role development appear to play at least some part in the job

satisfaction of these providers. More research on job satisfaction might provide useful information as these relatively new professions continue to change and grow. Since job satisfaction has not been well-researched, it is impossible to say whether obstacles to career opportunity will pose a problem for employers wishing to retain a nonphysician provider. Other factors related to job satisfaction—such as practice and job characteristics, personal and background characteristics, and role relationships in the employment setting—also need further study.

Productivity and cost-effectiveness

Studies using comprehensive and valid measures of the cost and productivity of nonphysician providers are generally small in scale and confined to a particular kind of practitioner and practice setting. It is not really possible to generalize from these studies. More comprehensive studies often lack detailed or precise measures of the tasks performed by the nonphysician, the number of office visits measured, the time spent in patient care, and other relevant factors.

For the purposes of health planning and policy, it is important to be able to compare the cost and productivity of the nonphysician provider with the cost and productivity of the physician. Methods used to measure these factors differed greatly in the studies of nonphysician providers, and differences are still greater when information on nonphysicians is compared with information on physicians.

In addition, there are relatively few multivariate analyses of provider-patient encounters. As a result, little information is available about what determines the duration of a visit, the amount of time spent in various activities, and other concerns for either physicians or nonphysician providers. Consequently, few conclusions can be drawn about the effects of practice setting, specialty, or type of provider.

Some of these problems could be alleviated if the definitions of variables and the methods used to measure them were standardized for future research efforts. These could then be used in major studies of nonphysician providers and tied to those used in studies of physicians. In this way, the information from the two types of studies could be compared. If the various ongoing studies of nonphysician providers could be made compatible in terms of research design, then a data base could be developed to analyze the cost and productivity of the providers. It would be helpful if these regular surveys were supplemented by observational studies of small, random samples of respondents in practice settings. Finally, the data gathered from the different studies of nonphysician providers could be incorporated into a comprehensive data base for studying task delegation.

In the meantime, attempts are being made to compare existing data sets with one another and to draw conclusions about cost-effectiveness and other issues. In a recently completed study by Record and her colleagues (1978), the cost-effectiveness and productivity of NP's and PA's in ambulatory care for adults and children were investigated. The study involved an exhaustive literature search and a detailed analysis of 400 articles containing empirical findings concerning delegation, productivity, and cost.

Record and her colleagues focused on 15 studies that used office visits as a measure of delegation and asked what percentage of physician office visits could be delegated to nonphysicians. Experience would suggest that safe delegation could be as high as 80 percent[3] in adult primary care and 90 percent in pediatrics (Record et al., 1978), even though actual delegation varied widely according to practice setting. Actual delegation, however, is influenced by a number of factors. Among them are practice characteristics (i.e., setting, practice structure, age of practice), provider characteristics (i.e., role strain, legal issues, reimbursement), and market characteristics (particularly level of demand). The greatest degree of delegation would most likely occur in some health maintenance organizations, where 65–85 percent of office visits were delegated to nonphysicians. The least delegation apparently takes place in solo practice settings; studies showed that only up to 40 percent of office visits were typically delegated to nonphysicians.

Studies of the relative productivity of physicians and nonphysicians are inconclusive. Whether observed differences in productivity result from differences among the providers themselves or differences in the kinds of patients and problems they manage cannot be determined from available data. A Congressional Budget Office report on nonphysician providers (Congressional Budget Office, 1979) concluded that NP's see about 60 percent as many patients per hour as physicians, and PA's see about 90 percent as many. One reason for the somewhat lower overall productivity of NP's in contrast to PA's may be that NP's provide nursing care and medical care while PA's give only medical care. In situations where nursing functions are assigned to other nursing staff and only medical functions are performed by the NP, the productivity of the NP would probably be closer to that of the PA.

To properly evaluate productivity in practices that use nonphysician providers, physician time allocated for consultation with and supervision of nonphysician providers must be considered. Record and her colleagues (Record et al., 1978) found within the Kaiser-Permanente system that 10 percent of a physician's time was required to provide support for each PA. The substitution ratio of physicians to nonphysician providers appears to be between .50 and .75, depending upon the setting or context (Record et al., 1978; Scheffler, 1978). This means that 1½–2 nonphysician providers can substitute for one physician.

The Congressional Budget Office report estimates that nonphysicians cost about one-third to one-half as much as

[3] This figure is the percent of office visits in adult primary care for which PA's were deemed competent at Kaiser-Permanente in Portland. Record and her colleagues applied the Kaiser-Permanente criteria to data from the National Ambulatory Medical Care Survey (NAMCS) and estimated that the figure for NAMCS might be nearer 75 than 80 percent because of differences in case mix and other variables.

physicians to employ; this includes supervisory costs (Congressional Budget Office, 1979). Since the costs of supplies and support personnel seem to be similar for physicians and nonphysicians (Congressional Budget Office, 1979; Record et al., 1978), nonphysicians appear to be cost-effective substitutes for physicians in appropriate areas of care.

Nonphysicians are also less expensive to train than physicians. Training expenses for a medical student are greater than $60,000, while training expenses for NP's and PA's are less than $12,000 (Congressional Budget Office, 1979).

Findings concerning the effects of nonphysician providers on the prices charged for medical care are less clear-cut. Although reductions in the costs of health care may be passed along to the consumer, in some cases extra practice income is absorbed by the physicians. In other cases physicians choose to keep their income unchanged in order to work fewer hours (Congressional Budget Office, 1979). In general, however, employment of nonphysicians apparently lowers the price of health care to some extent. The "Physician Extender Reimbursement Study" found that the average billings per visit to patients and third-party payers were somewhat lower in practices that employed nonphysicians than in those that did not.

Summary

This chapter has dealt with the supply, training, and deployment of nonphysician health care providers in primary care. Research findings suggest that these providers, with physician supervision, can manage a substantial number of the tasks traditionally performed by the physician without compromising the quality of care provided. These tasks would depend on care setting and patient mix. In addition, health care by nonphysicians can often be provided at considerable cost savings. Generally, acceptance of nonphysician providers by patients and physicians has been high. However, some physicians remain unwilling to delegate tasks for many reasons, including legal ambiguities and limitations on reimbursement for nonphysician services.

The number of nonphysician providers has grown significantly in the last decade. This growth can be attributed, at least in part, to increased Federal funding of training programs. However, full use of these providers will require an increased level of responsibility and legal authority for them as well as major changes in the reimbursement policies of third-party payers.

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CHAPTER IV

Medical Technology Assessment — Greater Research Community Involvement[a]

Introduction

During the last few decades, the roles that science and technology play in medicine have rapidly expanded. Every year large numbers of new preventive, diagnostic, or therapeutic technologies are transferred from research and development to practice.

While biomedical research and technological innovation have led to marked improvements in health and medical care, some serious questions about the application of technologies have been raised in recent years. Some of these questions involve the appearance of serious "side effects" from certain medical procedures, the ethical problems posed by use of medical technologies, and the contribution of technological innovation to rapidly rising health care costs.

Evidence indicates that a number of technologies have been widely accepted by practitioners without adequate information about potential benefits, risks, cost-effectiveness, and societal impact. At the other extreme, some well-validated innovations have been slow to reach the practicing community (Stross and Harlan, 1979). Thus, efforts are being made to improve both assessment of medical technologies and dissemination of information regarding these technologies.

In 1976, amid growing concern about the need for more effective health technology assessment, the President's Biomedical Research Panel and several members of Congress suggested that the National Institutes of Health (NIH) take the lead in improving the process for transferring information pertinent to health care from the research community to the practicing community and the public.

At that time, NIH, as the principal biomedical research agency of the Federal Government, was supporting a wide variety of clinical investigations, including almost 1,000 clinical trials. Through clinical trials, new and superior medical interventions may be identified and validated, or inefficacy of established procedures may be demonstrated.

The traditional means for disseminating results from clinical trials has been to publish them in medical and scientific journals. Although this works well enough within the research community, most health care providers require something more. Health care providers want to know that a new technology has indeed been validated for efficacy and safety as well as the extent to which the validation is authoritative or widely supported by the research community.

In this process of "technology transfer" from clinical investigation to medical practice, delay in transfer has probably not been the main problem. Rather, the problem has been the absence of a mechanism to promote the widest and most effective use of the new development. In the past, no formal process existed to assure that a technology was validated for safety and efficacy. As a result, the practicing community, third-party payers, and others had little guidance in choosing among various technologies.

To alleviate this problem, NIH outlined a proposal in early 1977 for a new technology assessment effort referred to as "consensus development." The proposal recommended that new formal channels of communication be opened. These channels were to transmit information about clinically relevant research findings more effectively among the biomedical research community, the practicing medical community, and the public. NIH was to be the catalyst for this new approach. The process was designed to complement, not replace, traditional dissemination of research data through publication in medical periodicals.

A primary objective of the plan was to draw the biomedical research community much further into formal assessments of new technologies and preparation of information for use by practitioners, third-party payers, regulators, and the public. The key component was consensus development—a bringing together of research scientists, practicing physicians, consumers, and others in an effort to reach general agreement on the efficacy and safety of a specific medical technology. Although the emphasis was to be on scientific considerations, ethical issues and cost implications also were seen as potential subjects for discussion.

This new technology assessment program was implemented in 1977, and the first consensus development conference was held that September. In all, 12 consensus

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development conferences were held during 1977-78, the first year of the program, covering a range of subjects from dental implants to treatable brain damage in the elderly. The 1979 schedule includes 11 consensus conferences on other varied topics. Many of these conferences will place increased emphasis on economic analysis.

To coordinate and provide technical assistance to NIH technology assessment activities, the Office for Medical Applications of Research (OMAR) was formally established within NIH in October 1978. OMAR works with the bureaus, institutes, and divisions at NIH to promote effective distribution of technology assessment information to the academic biomedical research and health care communities and the public. OMAR monitors the progress and effectiveness of NIH technology assessment and the dissemination of the resulting information.

At about the same time that OMAR was established, the 95th Congress was passing legislation (the Health Services Research, Health Statistics, and Health Care Technology Act of 1978) to create a National Center for Health Care Technology (NCHCT). President Carter signed the bill into law (P.L. 95-623) in November 1978.

Under that legislation, NCHCT was established within the Office of the Assistant Secretary for Health, Department of Health, Education, and Welfare (HEW). NCHCT coordinates the Department's technology assessment activities, makes recommendations on the appropriate use of new and existing technologies, and sets priorities for technology assessment. In carrying out these responsibilities, the Center encourages, undertakes, and supports research in three major areas: factors affecting the use of health care technologies; methods for disseminating information on health care technologies; and the safety, effectiveness, and social, ethical, and economic impacts of specific medical technologies. Furthermore, NCHCT makes recommendations to HEW's Health Care Financing Administration (HCFA) on the cost-effectiveness, appropriateness, and medical validity of various technologies. HCFA then uses this information in its deliberations on Medicare and Medicaid reimbursement.

NCHCT and OMAR work with the Congressional Office of Technology Assessment (OTA) to improve the Government's health technology assessment activities. OTA was created in 1972 as an advisory arm for Congress, providing legislators with independent data about potentially beneficial and harmful effects of technological applications.

The remainder of this chapter is devoted to summaries of selected NIH consensus development conferences convened during 1977–78. Topics covered are breast cancer screening, antenatal diagnosis, and surgical treatment of morbid obesity.

Breast cancer screening

Breast cancer is the most common form of cancer among women. In 1977, nearly 35,000 women died from cancer of the breast. While breast cancer mortality is declining in women under 50 years of age, the death rates for women 50 years of age and over are rising rapidly. Although relatively little is known about the prevention of breast cancer, the chance for survival appears to be good if the cancer is found and surgically removed before it spreads. Thus, efforts to control breast cancer have concentrated on large-scale population screening to assure early diagnosis and treatment.

Screening for breast cancer can include many modalities, from encouragement of self-examination to clinical examination, including mammography (X-ray examination of the breast) and thermography (a procedure which measures differential breast surface temperature to diagnose breast cancer). Although it has been suggested recently that self-examination is effective in detecting cancer at an earlier stage (Foster et al., 1978; Greenwald et al., 1978), most screening efforts have concentrated on physician examination with mammography. Mammography was first used in 1913, but it became common in the 1960's after a clinical trial showed that it provided accurate diagnostic data (Office of Technology Assessment, 1978).

The major impetus for using mammography in a screening program (i.e., for detection of breast cancer in the routine examination of a population of asymptomatic women) was provided by the study conducted in the Health Insurance Plan (HIP) of Greater New York (Shapiro, 1977). The HIP study was a randomized controlled trial, initiated in 1963, that was "designed to test whether periodic screening with clinical examination and mammography results in reduced breast cancer mortality among women aged 40–64 years" (Shapiro, 1977). The results showed that the combined modalities of physical examination and mammography resulted in a 40-percent reduction in mortality among women 50 years of age and over but provided no evidence of a reduction among women under 50 years of age.

Early findings from the HIP study led to the initiation of Breast Cancer Detection Demonstration Projects (BCDDP) during 1973–74 at 29 locations around the country under the auspices of the National Cancer Institute and the American Cancer Society. The purpose of BCDDP was to demonstrate the feasibility of periodic screening of large numbers of women for breast cancer, using clinical history, physical examination, mammography, and thermography. Following inception of this program, however, questions were raised about the relative values of the screening components when compared to possible risks involved with the ionizing radiation from mammography (Bailar, 1977). Bailar suggested that the radiation used to detect cancers might also induce malignancies at a later date. Bailar was primarily concerned about the use of mammography in screening programs rather than its use as a diagnostic tool for X-ray examination of the breast in women with signs or symptoms that might be related to breast cancer.

In October 1975, the National Cancer Institute appointed three committees of experts to review the risks

and benefits of screening. The first committee reviewed and reanalyzed the data from the HIP study and concluded that "the entire benefit occurs among women 50 years of age and over" (National Cancer Institute, 1977). This group also noted that the HIP study was designed to test the efficacy of screening by both mammography and physical examination. It was, therefore, not possible to directly test the benefits of mammography compared with physical examination. Reanalysis of the data suggested, however, that "mammography appears to have led to an approximately 10–15 percent reduction in breast cancer mortality for women over age 50" (National Cancer Institute, 1977).

The second group of experts reviewed the evidence on the risks associated with mammography and concluded that radiation of the breast by mammography can indeed induce breast cancer (National Cancer Institute, 1977). However, the issue is complicated by the fact that improvements in mammographic equipment have led to smaller doses of radiation. As the dose decreases, it becomes more difficult to provide reliable estimates of risk.

The third group reviewed the pathology findings of breast cancer cases in the HIP study. This group also pointed out the difficulty of establishing the independent effect of mammography on mortality. The three groups presented the following joint recommendations (National Cancer Institute, 1977):

- The dose delivered in mammographic screening should be kept as low as possible.
- The use of mammography for routine screening of women under 50 years of age should be discontinued.
- The National Cancer Institute (NCI) should support a randomized clinical trial to determine the benefit of mammography in routine screening of women over 50 years of age.

In view of the continuing debate of the merits of mass screening for breast cancer, NCI convened a Consensus Development Conference on Breast Cancer Screening at NIH in September 1977. The objective of the Conference was to develop a set of recommendations on the major issues and questions that had arisen concerning breast cancer screening and BCDDP, including mammography.

The panel named to deliberate on the mammography question met in open forum at NIH, September 14–16, 1977. The panel reviewed the reports generated by the three ad hoc groups (and a report made by a fourth, later named to review the BCDDP findings in depth) and heard testimony from interested professionals, associations, BCDDP project directors, and members of the public. Throughout its deliberations, the panel repeatedly emphasized the distinction between mammography used for diagnosis—the value of which was not in question—and mammographic screening to detect disease in women without symptoms or suspicious findings by their physicians.

Following are the conclusions drawn and recommendations made by the consensus panel (Perry, 1978):

The only sound scientific evidence that demonstrates the benefits of breast cancer screening is derived from the HIP study. The data from this randomized controlled trial—which formed the rationale and stimulus for BCDDP—indicate that periodic breast cancer screening can decrease the number of deaths resulting from breast cancer by about 40 percent in women who are 50 years of age and over. However, the HIP study thus far shows no decrease in breast cancer mortality attributable to screening women under 50 years of age.

The evidence indicates that the benefit of the screening program rests on the combined use of physical examination and mammography. There are no rigorous scientific data showing to what extent either physical examination alone or mammography alone may be beneficial.

Mammographic techniques have improved markedly in recent years, with smaller lesions at presumably earlier stages of development now being detected. The advantage of mammography lies in the fact that appropriate therapy may be administered at these earlier stages of breast cancer, thereby improving prognosis.

Moreover, radiation dosage has been decreased significantly. Nonetheless, data are insufficient to indicate that these advances have resulted in decreased mortality for women under 50 years of age at the time of screening.

The use of mammography is associated with an inherent risk of radiation exposure, and studies indicate that breast tissue is particularly susceptible to radiation damage. The precise radiation risk is difficult to quantify, but current evidence strongly suggests that risk increases linearly with increasing dose and is linear down to the lowest dose.

With repeated examinations of one cohort of women, the likelihood of finding new cancers progressively declines after prevalent cancers are detected, while the total radiation given each woman progressively rises. This puts an obvious limit on the advisability of repeated rescreening of the same population.

New diagnostic and screening techniques are needed. There should be greater emphasis on research with noninvasive techniques, such as thermography, ultrasound, and biologic markers.

Because the potential benefits of thermography remain undocumented, thermography should be discontinued as a routine part of the BCDDP screening program except in those centers where sufficient expertise is available to justify further clinical investigation and research. Use of thermography during BCDDP was not set up as a research study; however, its continued use should require the development of a research design.

The panel deplored the lack of clear-cut data on the efficacy and the risk-benefit ratio of screening for women under 50 years of age. Although they did not come to an agreement about the feasibility and logistics of using randomized clinical trials to resolve such issues, such trials will be necessary in order to answer certain questions concerning the efficacy of periodic breast screening.

BCDDP should continue to monitor all women in whom breast cancer has been diagnosed. Although the panel was

unable to assess the practicality of following all women who have had a mammogram under BCDDP, there seemed to be general agreement that such followup would be important and that this question deserves further consideration.

Demonstration programs by definition utilize proven and practical methods to project new information to the medical community. However, from its inception, BCDDP has of necessity incorporated certain practices of assumed but unconfirmed value.

As a demonstration program with investigational components, therefore, BCDDP must come to grips with several important ethical concerns. BCDDP's informed-consent form should indicate the radiation dosage to be delivered to the patient and assure that all information gained through the program is disclosed to the screenee as well as to her physician. The screenee should receive the informed-consent form and appropriate background materials beforehand, so that she can discuss the proposed procedure with her family and her physician.

The histology of certain lesions interpreted as malignant should be reviewed by at least two pathologists prior to definitive therapy.

Women who have been screened already and who have been diagnosed as having cancer should be notified promptly if there has been a change in diagnosis.

Any new experimental study should take into consideration a variety of issues, for example, its justification from a cost-benefit point of view, the informed-consent process, the way in which research subjects are selected, and the development of guidelines for compensation to individual participants who are injured in the course of the study. Furthermore, more women, both professional and consumer representatives, should be included in designing and planning any future studies.

Based on the available evidence, with the understanding that no new participants are being added to the program and that limits will be set on radiation exposure, BCDDP screening, using mammography and physical examination in combination, should be continued for those women 50 years of age and over who are currently enrolled. Regardless of the location for mammographic screening, upper limits should be set on radiation exposure consistent with the best current data. Women subjected to mammography should ask for such information and should be urged to maintain their own personal record of exposure.

No convincing justification for routine mammographic screening for women under 50 years of age has been found. This does not imply, however, that physical examination and breast self-examination are not important for women of any age.

Routine mammography for women 40–49 years of age enrolled in BCDDP should be restricted to women who have a personal history of breast cancer or whose mothers or sisters have a history of breast cancer.

Mammographic screening of women under 40 years of age should be limited to those women having a personal history of breast cancer.

Women under 50 years of age who are already participating in BCDDP should be given the opportunity to continue having mammograms if they wish—as long as they are informed that the benefit is not proven, that a risk is presumed, and that the panel does not recommend mammographic screening in this age group.

Antenatal diagnosis

There are more than 3 million pregnancies in the United States each year. The majority of these pregnancies lead to healthy newborn infants, requiring relatively little medical attention. However, many pregnancies do result in adverse outcomes: At least 1 percent result in fetal deaths; about 1 percent of infants die within the first month of life; approximately 7 percent of infants have low birth weights that threaten survival or lead to complications in development; nearly 5 percent of live-born infants have a significant congenital malformation, birth defect, or genetic disorder. During the past several years, a variety of sophisticated technologies have been developed to diagnose fetal disorders and to manage high-risk pregnancies from the time of conception. Some of these technologies have even become part of the routine care of all obstetrical patients. This increase in the technological management of "normal" pregnancy has come into conflict with a movement toward "natural childbirth" and a general increase in concern about the adverse effects of technology, some of which may not be apparent for many years. In addition, techniques for antenatal diagnosis (i.e., techniques used to diagnose problems of the fetus prior to birth) raise serious ethical, legal, and economic issues.

In March 1979, NIH organized a Consensus Development Conference on Antenatal Diagnosis. The Conference consisted of three separate task forces, each of which considered one of the following topics in the antenatal area: predictors of hereditary disease and congenital defects, predictors of fetal maturation, and predictors of fetal distress. Each of these issues will be discussed separately.

Hereditary disease and congenital defects

Each year between 100,000 and 150,000 live-born infants are affected by congenital malformations, single gene hereditary disorders, and chromosomal disorders and anomalies (National Institute of Child Health and Human Development, 1979a). Furthermore, such problems contribute significantly to fetal death, infant mortality, and morbidity during childhood.

The estimated cost of hospitalization resulting from hereditary disease and congenital defects is more than $800 million annually. In addition, the total cost for maintenance and care of individuals with chromosomal abnormalities is substantial (National Institute of Child Health and Human Development, 1979a). The psychosocial impact on families who experience the birth of infants with hereditary disease and congenital defects is also a major burden.

Four technologies that provide approaches to the prenatal evaluation of the fetus in early pregnancy were reviewed by the Task Force on Predictors of Hereditary Disease or Congenital Defects. These technologies share a common purpose:

> "Prenatal detection of hereditary disease or congenital defect has evolved in the past decade as a vital new option in the reproductive (genetic) counseling of many families at increased risk for such conditions in their offspring. Where families in the past may have been unwilling to risk further pregnancies or even to chance reproduction because of the prior birth of a child with such a condition, or where such a disorder may have occurred in a close family member, prenatal testing now may benefit many such couples. The 'Russian roulette' atmosphere which existed previously for these families now can be obviated in many instances. Through prenatal testing and the available option of abortion (should the fetus prove to be affected with the 'at risk' disorder), families can be aided, if they choose, to have their own children, assured that their offspring will not be affected with the condition for which they are at risk.
>
> "Importantly, the utilization of these technologies is not considered applicable to all pregnancies nor is it a means to guaranteeing the birth of a normal child. Rather, consideration of early antenatal diagnostic study is indicated in certain defined pregnancies where known increased risk exists for specific and detectable hereditary diseases or congenital defects. The decision as to whether or not to undergo such studies must be that of the mother or couple, made after thorough genetic counseling and discussion of all risks and outcomes have been accomplished. Discovery of a fetal anomaly need not be equated with elective abortion, but rather may enable the family, fully informed of the nature of the defect, to anticipate and plan for any special needs or provisions which the birth of the abnormal child may necessitate" (National Institute of Child Health and Human Development, 1979a).

The major tool used for prenatal diagnosis is amniocentesis. Amniocentesis was widely used as early as the 1950's to detect disease associated with the presence of the Rh factor. Since 1967, it has been used to identify chromosomal and metabolic defects in the second trimester fetus. During amniocentesis, a needle is inserted through the abdomen of the pregnant woman into the uterus, and a small amount of amniotic fluid is drawn from the sac surrounding the fetus. The fluid can be analyzed directly for substances that serve as indicators of fetal health. One of these substances is alpha fetoprotein, the major protein of fetal blood serum. High levels of alpha fetoprotein may indicate that the fetus has a major deformity of the brain or spinal cord.

After reviewing the literature, the Task Force concluded that amniocentesis is highly accurate and entails relatively little risk to the fetus or mother (National Institute of Child Health and Human Development, 1979a). As a result, the Task Force recommended that physicians advise certain high-risk patients about the availability of amniocentesis so that she and her spouse can make an informed decision about its use.

In cases where amniocentesis is elected, the Task Force recommended that it be preceded by another new technology, pulse-echo sonography. This technique uses sound waves directed at the abdomen of the pregnant woman to picture the inner structure of the uterus, placenta, and fetus. It has been shown to reduce the risks of amniocentesis by providing a guide for the proper insertion of the amniotic tap. It has also been used as a diagnostic technology itself for the detection of major structural abnormalities. The Task Force suggested that its use for the latter purpose is still in the research stage (National Institute of Child Health and Human Development, 1979a). There are currently no known adverse effects from sonography.

Fetal maturation

Although most pregnancies proceed through a normal delivery, a sizable number are subject to active obstetrical intervention through delivery by cesarian section. The proportion of births delivered by cesarian section doubled since the mid-sixties to about 15 percent in 1977. Although the reasons for this increase are not entirely clear, cesarian section is indicated when the uterine environment is no longer suitable for fetal development. Balancing the risk of premature delivery against the risk of remaining *in utero* is necessary for the selection of an optimal time for intervention. A technique for estimating fetal maturation is, therefore, very important to the obstetrician faced with such a decision.

The major risk to the infant of premature delivery is respiratory distress syndrome (RDS). The incidence of RDS has been estimated at 40,000 cases per year, and of these, about 30 percent die. Prematurity also contributes to mental retardation, cerebral palsy, and other neurological complications (National Institute of Child Health and Human Development, 1979b).

Some studies suggest that about 15 percent of RDS cases result from cesarian section following errors of judgment concerning fetal maturation (Goldenberg and Nelson, 1975; Hack et al., 1976). Presumably, such cases could be prevented if more accurate estimates of fetal age were available.

Two recently developed techniques promise to provide such estimates: biochemical measurements based on third-trimester amniocentesis and ultrasonography to measure fetal head size. The Task Force on Predictors of Fetal Maturation reviewed these techniques and concluded that these methods have the potential to eliminate inadvertent premature delivery of most infants. Furthermore, based on current knowledge, the Task Force consensus was that the potential benefits of both techniques in preventing premature deliveries far outweigh the costs and possible risks. But, because the long-range effects are unknown,

ultrasound should not be used routinely for all women; ultrasound and third-trimester amniocentesis should be used only when indicated, that is, in high-risk pregnancies, in cases where the woman has had previous cesarian sections, and in other cases where the physician feels the information on fetal maturity may be needed. Amniocentesis and ultrasound require considerable expertise, and postgraduate training in these methods should be given to physicians with no experience in the technique.

Fetal distress

Problems during labor and delivery are currently estimated to account for 20 percent of stillbirths, 20–40 percent of cerebral palsy cases, and 10 percent of the children born with severe mental retardation (National Institute of Child Health and Human Development, 1979c). These consequences of intrapartum fetal distress suggest the importance of carefully monitoring the birth process for any indication of fetal difficulty. Electronic fetal monitoring (EFM) is a technique developed in the 1960's to provide a continuous record of fetal distress through external monitoring by means of ultrasound as well as internal monitoring by means of catheterization through the cervical opening. When it was first introduced, EFM was generally used only for high-risk deliveries; many continue to advocate its use only for this group (NCHSR, 1979). However, EFM has become increasingly available, and it is often used to monitor routine deliveries (Lee and Baggish, 1976; Quilligan and Paul, 1975). The Task Force on Predictors of Fetal Distress was established to examine the role of EFM in the diagnosis of fetal distress.

The efficacy of fetal monitoring in reducing perinatal morbidity and mortality has been reviewed in four recent publications (NCHSR, 1979; National Institute of Child Health and Human Development, 1979c; Office of Technology Assessment, 1978; Hobbins, Freeman, and Queenan, 1979). Methodological difficulties in the studies already published, including three randomized trials, preclude a clear-cut conclusion. No apparent effect of EFM upon perinatal mortality appears to exist in low-risk patients, but there is some evidence of reduction in high-risk groups.

On the other hand, EFM is not without risk. Aside from the increase in relatively minor complications (i.e., infections from placement of electrodes and catheters for internal EFM), there is some concern that monitoring increases the risk of cesarian section. It has been suggested that the doubling of the cesarian section rate during the past decade is a direct result of EFM (Office of Technology Assessment, 1978). The Task Force, however, concluded that the increasing use of EFM and cesarian sections "is not necessarily reflective of a cause and effect, but rather a complementary relationship" (National Institute of Child Health and Human Development, 1979c).

In addition to risk, cost is a concern with EFM. Banta and Thacker (NCHSR, 1979) estimate the direct and indirect costs of EFM as $411 million per year if 50 percent of deliveries are monitored by EFM. The Task Force concluded that the "current or future economic impact of fetal monitoring is largely unknown, a victim of inadequate information about the critical effects of monitoring on the health of mothers and babies" (National Institute of Child Health and Human Development, 1979c).

In summary, the Task Force issued the following recommendations (NICHD, 1979c):

- Periodic auscultation of the fetal heart rate (i.e., using a fetal stethoscope by the nurse or physician to listen to the fetal heart sound), rather than EFM, should be the standard method of assessment of fetal condition for low-risk pregnancies.
- The use of EFM should be strongly considered in high-risk patients. These include cases when low birth weight is anticipated, when health history includes complications of pregnancy, when meconium is present in the amniotic fluid, and when abnormal fetal heart rate is detected.
- Although there is no evidence that EFM reduces mortality or morbidity in low-risk patients, under certain circumstances monitoring may be used even in low-risk situations. In any case, whether or not EFM is used, it should not be a substitute for clinical judgment.
- Appropriate use of EFM should include a full discussion with the patient to learn her wishes and concerns about fetal monitoring. EFM may be considered intrusive by women who desire a natural, family-centered birth, but when properly used and explained, it need not be.

Surgical treatment of morbid obesity

Morbid obesity, defined as a person being at least double his or her ideal weight, is a rare but serious condition. It can lead to a variety of disorders, including coronary heart disease, hypertension, diabetes, respiratory distress, gallbladder disease, and psychosocial incapacity, including social and economic discrimination.

A variety of drastic medical treatments have been tried on morbidly obese patients, among them prolonged fasting and very low-calorie diets consisting mainly of protein; but, only one-third to two-thirds of morbidly obese persons will remain on these regimens long enough to lose a substantial portion of their excess weight. Furthermore, it is estimated that only 10-20 percent of this initially successful group is able to maintain the loss for more than a few years.

As a result, current methods of medical treatment for morbid obesity have been ineffective. Because of this, various surgical procedures and other methods of dealing with this serious condition have been used by some practitioners. Among these are two types of intestinal bypass procedures, jejunoileal bypass and gastric bypass.

Jejunoileal bypass has become the most popular treatment for morbid obesity. In this procedure, part of the small intestine is bypassed, and two ends are reconnected, thereby limiting the absorption capability.

Although there is considerable literature on this procedure, there are those who feel that the many potential risks surrounding jejunoileal bypass have not been clearly delineated (Haverson, Wise, and Ballinger, 1978). Many reports suffer from incomplete documentation, inadequate followup, or small numbers of patients having different types of bypass (Haverson, Wise, and Ballinger, 1978).

Despite the wide use of jejunoileal bypass in the United States, opinions differ markedly about its benefits and hazards (Bray et al., 1977). While the procedure can clearly bring about substantial weight loss, data are not available for contrasting the morbidity and mortality resulting from jejunoileal bypass to the ill effects of severe obesity itself (Bray et al., 1977).

Because some jejunoileal bypass studies show high rates of complications and reversals, some physicians feel that the procedure should be reserved for patients with morbid obesity whose lives are imminently threatened by their conditions or the disorders to which severe overweight can lead (Haverson, Wise, and Ballinger, 1978).

In the gastric bypass, the size or capacity of the stomach is surgically reduced, and the first portion of the intestine is bypassed. No part of the stomach is removed so that the procedure is reversible. The purpose is to create a life-long reduction in food intake.

Gastric bypass is being used increasingly as the main treatment for morbid obesity and as a substitute for jejunoileal bypass in patients who have been unable to adjust to diarrhea and the other complications that follow intestinal bypass (Mason et al., 1978). Patients who have undergone gastric bypass also require considerably less care once they leave the hospital than do patients who have undergone jejunoileal bypass (Mason et al., 1978).

In addition to gastric and jejunoileal bypasses, gastroplasty has more recently been added to the list of procedures used to treat morbid obesity. Gastroplasty is a variation of the gastric bypass; however, in this procedure the stomach is reconstructed into a pouch shape, thereby reducing its capacity (Gomez, 1978).

These procedures were discussed at a Consensus Development Conference on the Surgical Treatment of Morbid Obesity held at NIH, December 4 and 5, 1978, and attended by surgeons, internists, basic scientists, psychiatrists, psychologists, legal experts, patients, and representatives of health insurance companies. The procedures most intensively reviewed were jejunoileal and gastric bypasses.

It was generally agreed that gastric bypass has fewer long-term side effects than the more established jejunoileal bypass; however, followup has been for only 2–3 years for gastric bypass compared with 5–7 years for intestinal bypass. Moreover, gastric bypass seems to be a technically more demanding procedure. It is still unknown whether patients with gastric bypass will lose as much weight or maintain substantial weight loss for as long a period of time as those receiving intestinal bypass.

Gastroplasty is promising, but assessment of its long-term effect on weight loss is not yet possible. Techniques designed to reduce the gastric reservoir are still evolving rapidly.

The most common, serious complications of jejunoileal bypass include a high incidence of kidney stones, unremitting diarrhea, development of various nutritional deficiencies, and possibly accelerated gallstone formation. Serious kidney problems may also develop. A few patients eventually regain much or all of their lost weight. Other long-term complications include a sometimes fatal liver cirrhosis that is probably related to bacterial overgrowth in the excluded intestinal segment. Many of these complications can be prevented or reduced by meticulous followup care.

Benefits associated with weight loss, regardless of the procedure used, include frequent amelioration of hypertension, reversal of cardiorespiratory impairment, reduction of hypertriglyceridemia (excess of fatty acids in the blood), improvement and sometimes disappearance of maturity-onset diabetes, greater physical mobility, and frequently a striking psychosocial rehabilitation. Also, a majority of patients who have received the jejunoileal bypass say that they would "do it again," despite certain distressing complications.

Consensus was reached that surgical interventions should be limited to morbidly obese patients with serious physical health impairments or psychosocial handicaps who have given suitable nonsurgical treatments a fair trial but have failed to show long-term improvement.

For the patient who undergoes an intestinal bypass procedure, the outcome is likely to be less predictable than it is for many other, more established operations. Because of these uncertainties, development and use of a truly informed-consent mechanism is essential. It was emphasized that the patient should receive all relevant information that would be needed to make an informed judgment and that such information should be presented in an objective and readily understandable fashion. If both jejunoileal and gastric bypass procedures are available, patients should receive a thorough explanation about the risks, benefits, and uncertainties of each bypass procedure and should be permitted to choose between them.

Comparison of the different surgical procedures was difficult because of constantly changing surgical techniques and insufficient followup data, particularly for the more recently developed operations.

Careful followup studies comparing gastric bypass and gastroplasty are needed to determine whether long-term weight reduction can be maintained in a majority of patients by means of these procedures. Standardized methods for case selection, surgical techniques, and followup must also be developed. Many of the differing results reported for jejunoileal or gastric bypass operations result from variations in surgical technique.

Despite the difficulties inherent in evaluating a growing number of different surgical procedures, clinical trials of the most promising new techniques and improvements of existing procedures should be encouraged. However, they should be theoretically well-grounded, tested in animal

models when appropriate, and adhere to carefully developed protocols previously approved by a properly constituted institutional review committee.

It was acknowledged that a number of important research issues on surgical treatment of morbid obesity remain. First, a better understanding of the different types of obesity, their implications for health, and their responses to treatment is essential. Next, more data are needed concerning the incidence of morbid obesity and the degree of risk associated with such severe obesity. Also, better techniques are required to identify early in life those individuals who are destined to become morbidly obese. The mechanisms controlling the effects of surgical therapies—particularly that controlling food intake—need much more attention. The ethical issues involved in such surgery, particularly with regard to properly designed informed-consent procedures, will require further consideration.

In the meantime, it is imperative that intestinal bypass operations only be performed in a setting that provides a multidisciplinary team of highly qualified physicians and surgeons committed to critical case selection, meticulous management, and long-term followup.

Summary

A common theme in the recommendations of all the consensus development groups is the need for more empirical evidence about the efficacy, risks, and costs of medical procedures and technological innovations. The paucity of experimental studies based on sound methodology has been noted in many reviews of medical innovations (e.g., Gilbert, Light, and Mosteller, 1975; OTA, 1978). The consensus development approach is not a substitute for such studies; rather, it provides an interim approach to technology assesment in the face of uncertainty and lack of information.

It is important to recognize, however, just what consensus conferences can and cannot do. For example, they can do the following:

- Synthesize the known information and provide the medical community with a current "state-of-the-art" summary of technical issues important to the treatment of patients.
- Reach conclusions on those aspects of safety and efficacy where available information is sufficient.
- Identify areas where more research and clinical trials are needed.

On the other hand, the conclusions reached by these conferences cannot be used as a substitute for economic, social, and medical data derived from controlled studies of technological innovations and medical practice. The fact that many consensus development panels failed to reach agreement because of a lack of adequate information highlights the need for such studies.

Another issue raised by the consensus approach is implementation. The only recommendations that can lead to direct actions by the Federal Government relate to support for research or demonstration projects, health services delivered under Government auspices (e.g., in Veterans Administration hospitals and Public Health Service facilities), and reimbursement under Medicare and Medicaid. For example, the recommendations of the breast cancer screening panel led to the immediate cessation of mammography for women under 50 years of age in the Breast Cancer Detection Demonstration Projects, supported by the National Cancer Institute. However, no direct action, other than information dissemination, was possible on the use of mammography as a screening modality for women under 50 years of age who use private physicians for periodic breast examination. Prospects for a greater impact on medical practice may be increased with the growth of the National Center for Health Care Technology.

In addition to the need for research on specific medical practices, research is needed in methods of technology assessment per se. Assessment requires careful synthesis of medical, economic, social, statistical, and ethical issues. Research is necessary in each of these fields to maximize its contribution to the overall assessment activity. In addition, further research on the ways in which analysis in these areas can be combined effectively is crucial to sound decisionmaking. The consensus development activities, the National Center for Health Care Technology, and Office of Technology Assessment will all provide important stimuli to knowledge development in this area.

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Part B: Data on the Nation's Health

SECTION I

Health Status and Determinants[a]

A. Fertility

During 1977, 3,326,632 live births were registered in the United States. This figure is more than in any year since 1971, but about a million less than in 1961 when the number of births peaked in the United States. From 1976 to 1977, the number of births increased 5 percent, the largest annual relative increase since 1950–51, the middle of the baby boom.

In 1977, the crude birth rate was 15.4 live births per 1,000 population, and the fertility rate was 67.8 live births per 1,000 women 15–44 years of age. Both rates have decreased about 36 percent since 1950, although they are slightly higher than they have been during the past few years. Between 1976 and 1977, increases in age-specific birth rates for women 18–39 years of age accounted for the overall rise in fertility.

Birth rates for black women have been and continue to be higher than the rates for white women. Black women generally begin childbearing earlier than white women, and they continue to have children at the same rate or at a greater rate than white women. For example, the 1977 birth rates for black women 15–17 and 18–19 years of age were 3.1 and 2.1 times greater, respectively, than for white women of the same age groups. For women 20–24 years of age, the differential decreased to 1.3, and for women 25–29 and 30–34 years of age, the rates were nearly the same. After 35 years of age, rates for black women were also much higher than the rates for white women.

Historically, birth rates have been highest for women in their twenties. There is evidence that childbearing is being postponed now until women enter their late twenties and early thirties. The relative magnitude of the birth rates for white women 20–24 and 25–29 years of age has shifted. In 1950, the birth rate for white women 20–24 years of age was 15 percent higher than the rate for white women 25–29 years of age; by 1960, the difference had increased to 30 percent. Since then, the size of the difference has decreased. By 1975, the rates for white women 20–24 and 25–29 years of age were nearly the same. However, in 1977 the rate for white women 25–29 years of age was slightly higher than the rate for those 20–24 years of age. The decrease in the differential is accounted for by the more rapid decrease in the birth rate for white women 20–24 years of age than in the rate for white women 25–29 years of age, 5 versus 3 percent per year, respectively, from 1960 to 1977. In contrast, the 1960 birth rate for black women 20–24 years of age was 35 percent higher than the rate for black women 25–29 years of age; by 1970, it had increased to almost 50 percent higher. As of 1977, the relative difference between the rates had decreased to 33 percent.

Among women 40 years of age and over, fertility has been decreasing since 1955. The birth rates for women 40–44 and 45–49 years of age decreased by about 6–7 percent annually since 1955 to 4.2 and 0.2 births per 1,000 women, respectively. Declines are noted for both white and black women in these age groups.

Birth-order-specific fertility rates have also decreased since the 1950's and 1960's. Marked decreases have been observed among 3d and higher order births. Since 1975, however, a small increase has been noted in the rate for 3d order births. These period or cross-sectional rates may reflect changes in the timing of fertility and not in actual or completed fertility.

Cohort fertility, on the other hand, follows childbearing through the reproductive years of a group of women who have the same year of birth. The completed fertility rate is a measure of the actual number of babies born alive to women who have reached the end of childbearing age, which is generally accepted as 50–54 years of age. The picture presented by these rates is free of the effects of a changing age distribution of childbearing and the effects of changes in the timing of fertility. Women born during the period 1871–75 were 50–54 years of age in 1925. This cohort had an average of 3.8 children per woman. More than a third of this group had five children or more, but one-fifth of the group were childless.

The average number of children born per woman decreased to 2.3 for the cohort born during the period 1906–10 and reaching 50–54 years of age in 1960. Only about 13 percent of this cohort had five children or more, and 22 percent were childless.

Women born during 1924–28, the most recent cohort for which completed fertility data are available, had an

[a] Prepared by Lois A. Fingerhut, Division of Analysis, National Center for Health Statistics.

average of three children each. The proportion of women having five children or more increased to 19 percent, while the proportion childless decreased dramatically to 10 percent.

Because the birth rates for women 40–44 years of age have recently been low, it is plausible to consider these women to be at the end of childbearing years. Women born during the period 1934–38 were 40–44 years of age as of January 1978. This cohort had already had about three children per woman—less than a tenth were childless, about a third had one or two children, and almost a fifth had five children or more. Projections of completed fertility rates prepared by the U.S. Bureau of the Census show a completed average of 3.2 children per woman for women born during 1935.[1]

Of particular interest in cohort fertility analysis is the 25–30 percent childless rate among women other than white born during the first two decades of this century. Much of this has been attributed to high rates of sterility resulting from venereal disease.[2] Despite the much higher proportions of these women with no children, the completed fertility rate has always been higher for these women than for white women.

About 17 percent of all infants born in 1977 were born to teenagers. Nearly two-fifths of these infants were born to young women under 18 years of age. Almost 30 percent of the births among black women were to teenagers, twice as high as the proportion among white women.

Trends in fertility are not the same at different ages of adolescence. The birth rate for the youngest group has fluctuated since 1968 between 1.0 and 1.3 births per 1,000 females 10–14 years of age. In 1977, they had about 11.5 thousand births at a rate of 1.2. The rate for those 15–17 years of age was about the same in 1968 as in 1977 after having increased by 12 percent from 1968 to 1972 and then decreasing by the same proportion from 1972 to 1977. The birth rate for women 18–19 years of age decreased by 27 percent to 81.9 from 1968 to 1977, a downward trend similar to that observed for women 20–24 years of age.

Although birth rates for black teenagers remain much higher than rates for white teenagers, the ratio of the black rate to the white rate for females 15–17 years of age decreased from 3.8 to 3.1 between 1968 and 1977. In contrast, the ratio among females 18–19 years of age remained fairly constant at 2.0–2.1.

Between 1971 and 1976, the level of sexual activity rose for unmarried females 15–17 years of age of both races, but the increase for white females was greater than the increase for black females.[3] In 1977, 131,000 infants were born to unmarried females 10–17 years of age, of which 92 percent were born to those 15–17 years of age. About 7 percent of black females and less than 1 percent of white females 15–17 years of age gave birth in 1977.

In 1968, less than 25 percent of white females 15–17 years of age were unmarried when they had a baby, compared with nearly 40 percent of those 15–17 years of age in 1977. Among black females the proportion unmarried increased from 72 percent in 1969 to 90 percent in 1977.

The trends in fertility rates are directly affected by trends in sterilization, contraception, and abortion, all of which underwent noteworthy changes in the 1970's. Findings from the National Survey of Family Growth, conducted in 1973 and again in 1976, showed that the proportion of currently married women in the childbearing ages who were capable of bearing children (fecund women) declined from 76 percent to 69 percent. This decline in the proportion of fecund women reflected an acceleration in the acceptance of surgical sterilization, compared with the trend since 1955. In 1976, 94 percent of the sterility was due to surgical procedures, and almost two-thirds of these operations were for family planning purposes.

The use of nonsurgical methods of contraception among currently married women declined between 1973 and 1976, as it had in earlier years, but only as a direct result of the increasing use of surgical sterilization. Among fecund wives (i.e., excluding wives who used surgical methods), nonsurgical methods of contraception remained relatively constant (89 percent in 1976). The overall popularity of the pill and IUD among white fecund contracepting wives remained unchanged from 1973 to 1976 (60 percent). However, there has been a decline in the use of the pill and IUD among black fecund contracepting wives (74 percent in 1973 versus 65 percent in 1976).

About 1.3 million abortions were reported in 1977, close to 600,000 more than in 1973, the year the Supreme Court legalized abortion. Nearly a third (31 percent) of all abortions were obtained by women under 20 years of age, a slightly lower proportion than in previous years. For the first time in recent years, childless women accounted for more than half (53 percent) of all abortions. In 1977, the trend continued toward early abortion (under 9 weeks of gestation) when the rates of abortion-related deaths and complications are lowest.

The impact of sterilization, contraception, and abortion on the trends in fertility rates is reflected in lower rates of unplanned childbearing. Comparing births to ever-married women in the 5 years preceding each of the National Surveys of Family Growth taken in 1973 and 1976, the proportion of unwanted births declined from 14 percent to 11 percent. Although the proportion of wanted births correspondingly improved, fully one-fourth of these births were unplanned in that they occurred sooner than they were wanted. Between 1973 and 1976, there was no significant improvement in the proportion of wanted births that occurred sooner than they were actually desired. That there was definite improvement in reducing unwanted births, especially in the later years of childbearing, but very

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[1] U.S. Bureau of the Census: Population estimates and projections, *Current Population Reports*. Series P-25, No. 704, Washington. U.S. Government Printing Office, July 1977.

[2] Farley, R.: *Growth of the Black Population*. Chicago. Markham, 1970.

[3] Zelnik, M., and Kantner, J.F.: Sexual and contraceptive experience of young unmarried women in the United States, 1976 and 1971. *Fam. Plann. Perspect.* 9(2):55–70, Mar./Apr. 1977.

little if any reduction in unplanned, wanted births, suggests that sterilization and abortion may have had a greater impact on reducing unplanned fertility than did the nonsurgical methods of contraception.

B. Mortality

The crude death rate in the United States continued the downward trend observed since the early 1930's when national mortality data first became available.[4] After a slight rise in the mid-1950's to mid-1960's, the rates declined every year from 1968 to 1977, except for 1971–72 and 1975–76. In 1977, there were 8.8 deaths per 1,000 population, 1 percent fewer than in 1976.

Trends in mortality rates differ among age groups. Age-specific death rates for children under 15 years of age decreased at a rate of about 2 percent per year from 1950 to 1970. By 1977, the pace of the decline accelerated to about 3 percent annually.

Among adolescents and young adults, 15–19 and 20–24 years of age, death rates decreased nearly 2 percent per year from 1950 to 1960 and then increased at about the same rate during the next 10 years. In the current decade, mortality again decreased at an overall rate of 1.2–1.5 percent per annum. However, from 1976 to 1977 the death rate for people 15–19 years of age increased by 5 percent, primarily attributable to increases in deaths from external causes—particularly from suicide which increased 20 percent and from motor vehicle accidents which increased 4 percent.

Mortality rates for adults in each 5-year age group, 25–64 years of age, decreased by less than 1 percent per year from 1950 to 1970, but the pace accelerated to a 2–3 percent decline per year during the 1970's.

Similarly, changes in mortality for the elderly were very small from 1950 to 1970, but the rate of decline increased to an average of about 2 percent annually from 1970 to 1977.

Knowledge of changes in specific death rates—that is, rates specific for any number of population characteristics such as sex, race, and age—is needed to understand the factors affecting mortality. Geographic differences in age- or race-specific mortality rates may reflect inadequate health care services and facilities or may direct attention to possible environmental problems associated with specific localities.

A large part of the change in the crude death rate from one calendar year to the next, however, is due to the changing age structure of the population. For an analysis of trends over time, it is advantageous to look at the age-adjusted death rate, a summary statistic useful for making annual comparisons. This rate shows what the level of mortality would be if no changes occurred in the age composition of the population from year to year. From the beginning of this century, the age-adjusted death rate decreased by 53 percent from 17.8 in 1900 to 8.4 deaths per 1,000 population in 1950, and then by another 27 percent to 6.1 in 1977. If the decrease in mortality from 1950 to 1977 was measured only by the crude rate, however, it would be about 8 percent, a figure that does not reflect the magnitude of the true decline in death rates.

From 1950 to 1970, the age-adjusted mortality decreases were much greater for females than males in both the white and black populations. During those 20 years, white female mortality decreased 22 percent at 1.2 percent per year, while white male mortality decreased by only 7 percent, at less than one-half a percent per year. Among black people, the difference was even greater—26 percent (1.5 percent per year) versus 4 percent (less than one-half a percent per year). Much of these differences are a result of decreases in heart disease mortality and in mortality from cancer of the digestive system and peritoneum and the genital organs, which have been greater for females than for males. More recently, decreases in mortality levels have accelerated for males and females. From 1970 to 1977, white mortality rates decreased at an average annual rate of 2.3 percent per year among females and at 1.9 percent per year among males. Black female mortality decreased at 2.9 percent per year and black male mortality decreased at 2.2 percent per year.

The relative difference between the age-adjusted mortality rate for males and females has been increasing over time. In 1950, the death rate for males was 1.5 times the female rate; by 1977, the ratio increased to 1.8. This increase in the sex ratio in mortality is evident for both white and black people. Among white people, the ratio increased from 1.5 in 1950 to 1.8 in 1977; for black people, it increased from 1.2 to 1.7 during the same 27 years.

Life expectancy at birth in the United States reached a record 73.2 years in 1977. During the first half of the century, gains in life expectancy were dramatic, attributable to decreases in infectious and parasitic diseases. From 1950 to 1970, 2.7 years were added to the expectation of life. The pace of improvement has accelerated during the present decade, with 2.3 years being added since 1970. Major gains in life expectancy were noted especially for people other than white whose life expectancy at birth improved by 4.5 years from 1950 to 1970, compared with 2.6 years for white people. Since 1970, an additional 3.5 years were added for people of all other races, compared with 2.1 years for white people. Most of the improvement has been among females. There is still a sizable difference—5 years—in life expectancy at birth between white people and all others.

At 65 years of age, recent gains in life expectancy have been similar for white people and all others. On the average, people reaching 65 years of age in 1977 could expect to live an additional 16.3 years, 1.1 years more than someone reaching age 65 in 1970. Life expectancy in the United States does not compare favorably with certain other industrialized countries. However, the recent annual improvements in number of years gained for both males and females is better in the United States than in most countries.

[4] In 1933, the death registration area for the first time included all States and the District of Columbia.

Infant mortality has shown marked improvements in the last 12 years. From 1965 to 1977, the infant mortality rate decreased by 43 percent to 14.1 infant deaths per 1,000 live births. For both white and black infants, declines of about 5 percent per year have been observed. During the preceding decade 1955–65, the annual rate of decline was much slower, less than 1 percent per year.

Despite overall decreases, black infant mortality is still considerably higher than white infant mortality. In 1977, the rate for black infants was 23.6, compared with 12.3 for white infants. Furthermore, there is no evidence that the rates are converging.

The rates of late fetal and perinatal mortality have been showing a similarly accelerated rate of decline, having decreased 40 percent and 44 percent, respectively, from 1965 to 1977 after a decade of slow change. The relative difference between the late fetal mortality rate for white infants and the rate for all others is smaller than the relative color differences observed in infant mortality. Similarly, the relative color differences in neonatal mortality are smaller than such differences in postneonatal mortality. This is likely a result of the increasing importance of environmental and socioeconomic factors as one passes from fetal development through infancy.

A number of factors may have influenced the reductions in infant and perinatal mortality: (1) more women receiving prenatal care early in pregnancy; (2) a decreasing proportion of higher risk births including fewer births to older women and fewer higher order births; (3) advances in medical science, particularly in neonatology; (4) increasing availability of the most modern care through regional perinatal centers; (5) improvements in contraceptive utilization, allowing women to time and space their pregnancies more effectively, thereby reducing the proportion of high risk births; (6) increasing legal abortion rates; (7) the availability of programs to improve the nutrition of pregnant women and infants; and (8) general improvements in socioeconomic conditions.

Geographic variation in infant mortality rates within the United States is substantial. During the periods 1965–67 and 1975–77, the New England and Pacific Divisions had the lowest infant mortality rates, and the East South Central Division had the highest infant mortality rate. During the latter period, Maine had the lowest infant mortality rate, 11.2, and the District of Columbia had the highest, 27.2.

During the period 1975–77, white infant mortality ranged from a low of 12.2 in New England to a high of 14.1 in the East and West South Central States. Among black infants, the rates ranged from 20.6 in the Pacific Division to 26.5 in the East North Central Division.

From 1965-67 to 1970-72, the largest relative declines in white infant mortality were in the New England, East South Central, and Mountain Divisions; for black infants, the South Atlantic, East South Central, and West South Central Divisions showed the largest relative decreases. From 1970–72 to 1975–77, the New England, West South Central, and Mountain Divisions all showed a 25-percent decrease in white infant mortality rates, while the East South Central and Pacific Divisions showed a 22-percent decrease in black infant mortality rates. On the whole, geographic variations were as high in 1975–77 as they were in 1965–67.

The infant mortality rate in the United States is higher than the rate in certain other industrialized countries. The 1977 data show Sweden, England and Wales, the Netherlands, and the German Democratic Republic as having lower infant mortality rates than the United States. The average annual decrease in infant mortality for the 1972 through the 1975–77 period is similar in the United States to that observed for the majority of the countries chosen for comparison. The rank of the United States could change depending on the list of countries chosen for comparison. Recent data covering more countries show the United States ranking about 13th in relation to the 20 countries with the lowest infant mortality rates.

Differences in classifying fetal and infant deaths may account for some of the variation in the infant mortality rates. There are some births for which it is difficult to decide whether the infant should be classified as having been born dead or having been born alive and then dying a short time later. To correct for this possibility, it is useful to compare perinatal mortality ratios which include late fetal and early neonatal deaths. For example, in 1977 the U.S. infant mortality rate was 48 percent greater than the rate in the Netherlands, while the U.S. perinatal mortality ratio was only 19 percent higher than in the Netherlands (a country for which there are comparable data years).

Heart disease, cancer, stroke, and accidents have been the leading causes of death since around 1950. In 1900, infectious diseases—particularly pneumonia and tuberculosis—were the leading causes of death, accounting for a fifth of all deaths in the United States. The very rapid decline in the death rates for these causes has been evident throughout the developed world. Social improvements such as sanitation, nutrition, housing, and education, contributed to the decline. Likewise, advances in medical care, such as immunization and the use of antibiotics, are associated with declining mortality.

More recently, however, decreases in death rates from some of the major chronic diseases, mainly the cardiovascular diseases including heart and cerebrovascular diseases, have been evident.

Heart disease continues to be the leading cause of death in the United States and, as such, is the predominant influence on total mortality. The age-adjusted death rate decreased by 18 percent in the 20 years from 1950 to 1970, an average of 1 percent per year, while it declined by nearly the same amount in the first 7 years of this decade at an average decline of 2.6 percent per year. During these 27 years, heart disease mortality rates declined more rapidly in the younger than in the older age groups. The decline was more than 40 percent for each 5-year age group, 25–49 years of age, and by more than 30 percent for each succeeding age group 50–74 years of age. For those in the 5-year age groups, 75 through 85 years of age and over, the decline was more than 20 percent.

Decreases in age-adjusted heart disease mortality have been much greater for females than for males, especially for 1950–70. Among white females, heart disease mortality dropped 25 percent, compared with a 9-percent decrease among males. Among black females and males, the decreases were 28 percent and 10 percent, respectively. During the current decade, the rates of decline in heart disease mortality for both races and sexes have become more nearly equal, 18 and 19 percent for white and black females and 15 and 14 percent for white and black males. As a result, the relative differences in the death rates for heart disease between males and females have been increasing over time. In 1950, heart disease mortality for white males was 1.7 times that for white females, and by 1977, the ratio widened to 2.1. Similarly, the sex ratios for the black population increased from 1.2 in 1950 to 1.6 in 1977.

Racial differences in heart disease mortality for males, especially at the younger ages, are very large. In each 5-year age group, from 25 years of age to 39 years of age, heart disease mortality for black males was more than twice as high as for white males in 1977. Between 40 and 64 years of age, the relative difference decreased, and for those 65 years of age and over, mortality was lower for black males than for white males. Racial differences in heart disease mortality were greater among females than males, especially at the younger ages.

Ischemic heart disease mortality includes about 90 percent of all heart disease mortality, and as such, the trends are similar. Age-adjusted death rates decreased about 3 percent per year during the past decade. For each 5-year age group, 25–59 years of age, declines of at least 25 percent during the period 1968–77 have been noted. Since 1969, the ratio of white male to white female mortality (2.2:1) has remained unchanged.

Some of the suggested explanations for the decline in heart disease mortality are: (1) decreased smoking in general and in smoking of high tar and nicotine cigarettes among adult males, (2) improved management of hypertension, (3) decreased dietary intake of saturated fats, (4) more widespread physical activity, (5) improved medical emergency services, and (6) more widespread use and increased efficacy of coronary care units.

Unfortunately there is no definitive evidence to determine which of these explanations or which combination can account for the decline.

The second major component of cardiovascular diseases is cerebrovascular disease or stroke, the third leading cause of death in the United States in 1977. Cerebrovascular age-adjusted mortality rates decreased about 25 percent to 66 deaths per 100,000 population, from 1950 to 1970. By 1977, the rate had decreased an additional 27 percent to 48 per 100,000 population. Reductions have been observed for males and females, white people and all others, and for nearly every age group. In recent years, cerebrovascular death rates have continued to decrease at a greater pace than have heart disease death rates, 4.5 percent versus 2.6 percent annually since 1970. Possible factors related to the decline include lowered incidence, improved management and rehabilitation of the stroke victim, and effective hypertension therapy (i.e., as hypertension is a major risk factor for stroke).

Malignant neoplasms, or cancer, is the second leading cause of death in the United States. In 1977, the age-adjusted mortality rate was 133 deaths per 100,000 population, 6 percent higher than in 1950. This overall rise masks significant differences in cancer mortality not only for individual sites, but also for males and females, white and black people, the elderly, and the young. For example, from 1950 to 1970, the age-adjusted cancer mortality rate increased for males at an average annual rate of 1.0 percent for white males and 2.3 percent for black males, and decreased for females, 1.0 percent for white females and 0.3 percent for black females. During the 1970's, the situation changed somewhat for females, showing annual increases of 0.1 percent and 0.7 percent for white and black females, respectively. The rate of increase decreased slightly for males with increases of 0.5 percent and 1.6 percent for white and black males, respectively.

Cancer mortality has been increasing for some sites, namely the respiratory system, breast, colon, pancreas, and bladder, and has been decreasing for others—the stomach, rectum, cervix, and uterus.

Of recent interest has been the 33-percent decrease in cancer mortality since 1950 for the population under 45 years of age. Decreases have been much greater for the population under 25 years of age than for the population 25–44 years of age. In addition, the rate for persons 45–49 years of age has decreased by 5 percent since 1974. The decreases have come about, in part, through reduced incidence of breast cancer in younger women, lung cancer in younger men, and substantial improvements in treatment for childhood leukemia and Hodgkins disease. In the 5-year age groups, between 50 and 64 years of age, cancer mortality increased, ranging from 6–15 percent since 1950. For those 65 years and over, the rate has risen 16 percent since 1950. Most of this increase has been among those 65–74 years of age.

Respiratory cancer included about one-quarter of all deaths from malignant neoplasms in 1977. The age-adjusted respiratory cancer mortality increased by 168 percent between 1950 and 1977 to 34.3 deaths per 100,000 population, while the rates for all other cancers combined actually declined.

The age-adjusted mortality rate for respiratory cancer more than doubled from 1950 to 1970, increasing at average annual rates of 4 percent for white males and females and at 7 percent and 5 percent for black males and females, respectively. During the following 7 years, mortality increased an additional 3 percent per year. The annual rates of increase slowed substantially for males and increased for females.

From 1950 to 1970, the sex ratios (i.e., male mortality to female mortality) in age-adjusted respiratory cancer mortality increased for black people; but by 1977, the ratios had decreased, accounted for by the faster rate of increase in female mortality. Regardless, respiratory cancer mor-

tality for males is significantly higher than for females (56 versus 16 deaths per 100,000 population in 1977 among white people and 78 versus 17 among black people).

The recent slower rates of increase for male mortality are attributed in part to lowered smoking rates and to the growing acceptance of cigarettes with lower tar and nicotine levels. Increases in heavy smoking for females may account for some of the reduction in the sex ratio differences.

Accidents remain the fourth leading cause of death in the United States. They are the leading cause of death for the population 1–34 years of age. The major component within this category is motor vehicle accidents (48 percent of the total).

As discussed previously, the increase in the motor vehicle accident death rate from 1970 to 1977 contributed to the overall mortality increase among teenagers. Motor vehicle accident death rates are higher for males 15–24 years of age than for any other group.

Motor vehicle accident mortality for the total population decreased about 1 percent per year between 1968 and 1973. The rate dropped 17 percent from 1973 to 1974 and remained at this low level for 2 additional years. These years with lowered rates correspond to the early stages of the "55 miles per hour" speed limit throughout the country. However, the death rate increased by about 4 percent from 1976 to 1977, perhaps an indication of relaxed adherence to or enforcement of the speed limit. According to provisional data, there were 53,610 motor vehicle related deaths in the United States in 1978, more than in any year since 1973.

C. Determinants and measures of health

The most readily available measure of pregnancy outcome is the infant's birth weight. Infants weighing 2,500 grams or less at birth fare much more poorly in terms of morbidity and mortality than infants weighing more than 2,500 grams. Data from the 1960 birth cohort study show that the infant mortality rate was about 17 times higher among low-birth-weight infants than among normal birth weight infants (190.3 versus 11.1 deaths per 1,000 live births, respectively).

The proportion of infants born at low-birth-weight (the low-birth-weight ratio) is about twice as high among black infants as among white infants, 13 percent versus 6 percent, respectively, for the period 1975–77. From 1970–72 to 1975–77, the proportion of low-birth-weight white infants decreased 8 percent, compared with only a 2-percent decrease among black infants.

Geographic variation in low-birth-weight ratios exists across the United States. For the period 1975–77, the ratios varied from a low of 5.2 percent in North Dakota to highs of 9.1 percent in Mississippi and 12.6 percent in the District of Columbia. For the two periods 1965–67 and 1975–77, the ratios were lowest in the West North Central and Pacific Divisions and highest in the South Atlantic Division. The relative difference between the highest and lowest ranking divisions remained the same during the 10 years from 1965–67 to 1975–77. The high ratios in many of the Mountain States are partially explained by the high altitude of the area and the concomitant reduced supply of oxygen available to the fetus.

Large variations among States in low-birth-weight ratios persist even when race-specific data are considered. For example, the ratios for white infants ranged from 5.0 percent in North Dakota and Alaska to 8.5 percent in Wyoming and New Mexico in 1975–77. Among black infants in States with at least 1,500 black births annually, Colorado had the highest ratio (14.6 percent) and Massachusetts had the lowest ratio (11.1 percent).

From 1965–67 to 1975–77, the largest relative decreases in low-birth-weight ratios have been in the Mountain and Pacific Divisions. More recently, low-birth-weight ratios among black infants have decreased substantially in Massachusetts, Rhode Island, Washington, and Oregon from 1970–72 to 1975–77.

Efforts made soon after conception can have a strong influence on the future health status of mother and infant. Through prenatal care, fetal growth and development can be assessed, and maternal behavior can be guided under appropriate supervision. The importance of the early initiation of prenatal care has been widely accepted in the United States. In 1977, 74 percent of the pregnant women started care within the first trimester of pregnancy, just 4 percent waited until the last trimester, and only about 1 percent received no prenatal care. Unfortunately, it is generally those women who experience higher risks of complications of pregnancy and/or birth—that is, women who are black, teenage, older, high parity, unmarried—who wait until late in pregnancy to get prenatal care.

Racial differences in the initiation of prenatal care are large. In 1977, about 77 percent of white women, compared with 59 percent of black women, began care in the first trimester of pregnancy. Seven years earlier, the relative difference was even greater, 72 percent of white women versus 44 percent of black women.

The importance of prenatal care has increased during the past several decades as medical technology has made advances in the diagnoses of antenatal complications. Prenatal detection of hereditary diseases and congenital defects is becoming a significant aid to both the medical community and the family in identifying "high risk" births. For example, since 1968, second trimester amniocentesis has been performed for an estimated 40,000 cases, with about 15,000 performed in 1978 alone. The rationale for the procedure is "to assess whether or not the fetus in that pregnancy is afflicted with, or at high risk for, a specific hereditary disorder or developmental defect for which it is known to be at increased risk." [5]

Amniocentesis is currently considered appropriate for pregnancies where there is an increased fetal risk for chromosomal abnormalities (e.g., Down's Syndrome),

[5] National Institutes of Health: *Antenatal Diagnosis*. NIH Pub. No. 79-1973. Bethesda, Md., Apr. 1979, p. I:34.

brain or spinal cord defects, certain genetic disorders (e.g., mental retardation and severe hemophilia), a variety of inborn metabolic derangements (e.g., Tay-Sachs disease), and for the possible presence of a neural tube defect (e.g., anencephaly).[6]

Since 1979 is the International Year of the Child, disease prevention in children is receiving special attention. Childhood immunization is a key indicator of the adequacy of preventive efforts.

As of mid-1979, 90 percent of children 5–14 years of age had been immunized against measles, polio, diphtheria, tetanus, and pertussis; about 84 percent had been immunized against rubella. The more serious situation, however, is among children 1–4 years of age. In 1978, about 38 percent had not been immunized against rubella, 37 percent had no measles vaccination, and 49 percent were without mumps vaccination. About 39 percent had not received the recommended dose schedule of polio vaccine, and 32 percent had not received the appropriate diphtheria-tetanus-pertussis (DTP) vaccine schedule.

During this decade, immunization levels among young children have improved for the measles, rubella, and the mumps. Immunization against measles increased from 57 percent in 1970 to 63 percent in 1978, and rubella immunization increased from 37 percent in 1970 to 62 percent in 1978. Since 1973, the immunization against the mumps increased from 35 percent to 51 percent. DTP and polio protection, on the other hand, has declined. In 1970, 76 percent of the children 1–4 years of age had at least three doses of DTP vaccine, and 66 percent had at least three doses of polio vaccine. By 1978, these proportions had decreased to 68 percent and 61 percent, respectively. As of 1978, 463,000 children had not receive any DTP doses, and nearly 1 million had not received polio vaccine doses.

In general, white children were more often immunized against these diseases than were children of all other races. Children living inside central cities of standard metropolitan statistical areas (SMSA's) were the least likely to be adequately immunized when compared to children living outside the central city and those not living in SMSA's. Within the central city, 61 percent of the children 1–4 years of age living in nonpoverty areas in 1978 had been immunized against rubella, compared with 51 percent of the children in the poverty areas. Similarly, about 60 percent of the children living in nonpoverty areas were adequately immunized against polio, compared with 43 percent in poverty areas.

Protection from these childhood diseases can come about either by having been immunized or by having had the disease. The proportion of children protected against rubella increased from 1970 to 1978 by about a third to 65 percent. Measles protection increased to 64 percent in 1977, an increase of one-quarter since 1965. The proportion of children 1–4 years of age who have ever had rubella decreased from more than 14 percent in 1970 to 8 percent in 1978. For measles the proportion dropped sharply from 20 percent in 1965 to 3 percent in 1978.

[6] *Ibid.*, pp. I:38–42.

State and local health departments are responsible for reporting the number of cases of certain diseases to the Center for Disease Control (CDC), although the reporting is voluntary. The completeness of reporting under such a system varies according to public concern and awareness of the importance of the disease. Also, cyclical variation in the occurrence of epidemics accounts for some of the annual increases or decreases. In addition to trends, the levels of specific diseases may be misleading. Some diseases, including the common childhood diseases, have been seriously underreported. The number of these cases reported to CDC is only about a tenth of the number reported in the Health Interview Survey, a nationwide survey.

Gonorrhea has ranked first among reportable communicable diseases in the United States since 1970. The number of cases per 100,000 civilian population has been increasing since the late 1950's. However, data for 1975 to 1977 suggest a reversal of the longstanding upward trend. The incidence rates of other venereal diseases, including syphilis, have been decreasing.

In the Health Interview Survey, a large sample of the civilian noninstitutionalized population is interviewed about self-perceived health status. Questions are asked about activity limitation and disability associated with specific chronic and acute conditions, about physician and dental visits, about hospitalizations, and about personal health habits (e.g., smoking).

Most people assess their own health as good or excellent. In 1972 and 1977, only about 12 percent assessed their health as fair or poor, compared with others in the same age groups. Not surprisingly, younger people feel better than older people; 4 percent of the population under 17 years of age reported themselves in fair or poor health, compared with 30 percent of the population 65 years of age and over. These proportions have remained basically unchanged since 1972. Race, family income, and residence, each adjusted for differences in respective age distributions, are associated with this measure of health status. For example, black people are twice as likely as white people to report fair or poor health. People in low income families (less than $5,000) are nearly 5 times as likely as those in the highest income group ($25,000 or more) to report fair or poor health. People living in the South and those living in nonmetropolitan areas are about 30 percent more likely than their counterparts in other regions or metropolitan areas to report fair or poor health.

In 1977, about an eighth of the population reported limitation of activity resulting from a chronic condition or physical impairment. As with self-assessed health status, limitation of activity is strongly related to certain sociodemographic characteristics. For example, while only 3 percent of the young people were limited in activity, 43 percent of the elderly reported activity limitation. Approximately 17 percent of the elderly were unable to carry on their major activity because of a chronic condition or impairment. Although the percentages are relatively small, there was a 38-percent rise between 1972 and 1977 in the

proportion of people 45–64 years of age and a 20-percent rise in the proportion 17–44 years of age who were unable to carry on their major activities. Proportionately more males than females (6 percent versus 1.5 percent) reported being unable to carry on their major activity, even though males were only slightly more apt to be limited than females. As more women enter the labor force, and as more women are employed in physically demanding jobs similar to those of many men, this difference may be reduced.

The socioeconomic differentials in limitation of activity are somewhat less than the differentials in reported health status. Black people are 24 percent more likely to report limitation of activity than white people. In addition, people in low income families are 2½ times more likely than those in high income families to report limitation of activity. Because causality cannot be determined from these data, limitation of activity may be a cause of lower income.

Data from the Health Interview Survey must be interpreted with caution. People can only report on the conditions they are aware of or think they have. Furthermore, since the data are limited to the noninstitutionalized population, the estimates of people limited in activity are lower than they would be if the institutionalized population were included.

The number of disability days measures, to some degree, the extent to which people have to cut back on the things they usually do. There were an estimated 17.4 restricted-activity days per person in 1977, resulting from either illness or injury. Days of restricted activity increase with age. There are also more disability days for black people than white people, and more for people in lower income families than for people in higher income families. Bed-disability days include nearly 40 percent of all restricted-activity days.

Acute conditions are a frequent cause of disability days. Unlike chronic illness, the incidence of acute conditions is highest for people under 17 years of age. The relationship by age has remained constant over time; that is, the incidence of acute conditions for the population under 17 years of age has been 1.4–1.5 times as high as the incidence for the population 17–44 years of age and about 2.0–2.2 times as high as for the population 45–64 years of age. For the elderly (65 years of age and over), these data would be somewhat more difficult to interpret. The elderly are less likely than younger people to report an acute condition; they are likely to have already limited their activity or be under medical care for one chronic condition so the onset of another may not further restrict them or cause them to seek additional medical care.

Since the incidence of acute conditons is highest in the winter months, it is advantageous to measure it by the year ending June 30 as opposed to the calendar year so that the peak season in measured as one unit rather than being divided between 2 different years. During 1976–77, there were about 223 acute conditions per 100 persons. The incidence rates vary from one year to the next depending on whether or not epidemics occur. For example, in 1971–72 and in 1968–69, the incidence of influenza was higher than in previous years. Questionnaire design is another factor affecting variation in rates. In 1974, for example, the questions on acute conditions were modified thereby affecting the rates for that year. Since the data are collected on a calendar year and are tabulated on a year ending June 30 basis, the 2 adjacent years are also affected. These factors make it difficult, if not impossible, to discern trends in the incidence of acute conditions.

Acute conditions cause an average of about 9 days of restricted activity per person per year, including about 4 days in bed. On the average, slightly more restricted-activity days were reported by people 65 years of age and over than by the younger population, despite a lower incidence of conditions. Part of this differential is associated with the higher threshold for the elderly in reporting acute conditions. It would appear then that an acute episode has a greater impact on an elderly person than on a younger person. With more people living longer than ever before, more sensitive measures of health are necessary to characterize the disease and disability patterns of an aging population.

Cigarette smoking is one personal health-related habit that has received much attention. A great deal of data has been collected on the impact of smoking on health. Smokers have a much higher risk of developing lung cancer than nonsmokers. The risk of dying from heart disease increases with increased smoking. Smoking during pregnancy has a demonstrated adverse effect on the well-being of the fetus and the health of the baby. Current cigarette smokers tend to report more acute and chronic conditions (e.g., chronic bronchitis) than those who have never smoked.

Based on 1978 data from the Health Interview Survey, the evidence is that campaigns against cigarette smoking have had some effect—particularly among males 20 years of age and over. During the 2-year period 1976–78, the percent of male smokers decreased to 38 percent, an average annual decrease of 4.3 percent, compared with an average annual decrease of 2.0 percent for the earlier 11-year period 1965–76. Between 1965 and 1976, the increase in former smokers accounted for 80 percent of the reduction in the proportion of cigarette smokers. From 1976 to 1978, however, only 31 percent of the reduction could be attributed to former smokers; an increase in the proportion of males who never smoked accounted for the remaining 69 percent.

Patterns for females are not as encouraging. In 1978, 31 percent of the females 20 years of age and over smoked cigarettes, decreasing at less than 2 percent per year for the previous 2 years, compared with a very small rate of decline (0.6 percent per year) for the 11-year period 1965–76. The reduction in the prevalence of smoking among women between 1965 and 1976 was attributed to an increase in the proportion of former smokers, offsetting the decrease in the proportion who never smoked. From 1976 to 1978, there was no change in the proportion who never smoked.

There appears to be an appreciable change in the social norms governing cigarette smoking among young people. Fewer people are starting to smoke than was true over a decade ago. In 1965, about three-fifths of the males 20–24 years of age were current cigarette smokers; by 1978, only two-fifths of these males were smokers. Among females of the same age group the change was less apparent. Slightly more than two-fifths were smoking in 1965, compared with a third in 1978.

Racial differences among males 25 years of age and over have remained relatively constant from 1965 to 1978, with the prevalence of smoking about 20 percent higher for black than white males. Overall, the proportions of white and black women who smoke have been about equal.

From 1976 to 1978, the proportion of current smokers who smoked at least 25 cigarettes per day increased from 31 percent to 36 percent among males 20 years of age and over and from 20 percent to 22 percent among females. Increases are evident in all age groups, but these may be misleading. Some of the changes are due to less frequent smokers quitting and some to increases in smoking of low tar and nicotine cigarettes.

Teenage smoking levels, which increased substantially from 1968 to 1974, showed signs of a decrease by 1979. Among both males and females, current smoking decreased from 16 percent in 1974 to 12 percent in 1979. Decreases were more pronounced for males 17–18 years of age than for most other groups. In 1974, 31 percent smoked regularly, compared with 19 percent in 1979.

The sex differential in teenage cigarette smoking (males per 100 females) reversed itself from 1968 to 1979. In 1968, 15 percent of the males 12–18 years of age were smokers, compared with 8 percent of the females; by 1979, a greater percent of females were smokers (11 percent for males versus 13 percent for females). The shift is particularly evident among those 17–18 years of age; in 1968, 30 percent of the males 17–18 years of age and nearly 19 percent of the females smoked on a regular basis, compared with 19 percent of the males and 26 percent of the females in 1979.

In the Health and Nutrition Examination Survey, standardized physical examinations and diagnostic tests are performed on a representative sample of the civilian noninstitutionalized population. Serum cholesterol, a major risk factor in the development of coronary heart disease, is one measure for which comparable data are available for 1960–62 and 1971–74. Recent evidence suggests that cholesterol can be lowered by dietary modification. From 1960–62 to 1971–74, the percent of males and females with elevated serum cholesterol levels (i.e., 260 mg/100 ml or more) decreased by 12.5 percent and 22.5 percent to 14.7 percent and 17.2 percent, respectively. Each age-sex group showed a decrease in prevalence, although there was some variation in the size of the reduction. During both time periods, females 25–44 years of age had a lower prevalence of elevated cholesterol levels than males, while the opposite was true among those 55–74 years of age.

Hypertension is an established risk factor in coronary artery disease and cerebrovascular disease. Elevated blood pressure[7] was as prevalent in 1971–74 as in 1960–62—about 18 percent even after adjustment for differences in the age distribution between the two time periods. Only for people 65–74 years of age is there evidence of a decrease in prevalence in each race-sex group. For both sexes, elevated blood pressure was almost twice as prevalent among black people as among white.

Occupational exposure to hazardous substances and exposure to pollutants in the air are two environmentally-related factors that can have a detrimental impact on health status. The attention accorded problems of occupational safety and health has increased greatly since the passage of the Occupational Safety and Health Act of 1970. Based on data from the National Occupational Hazard Survey (1972–74), it was estimated that 1 in 4, approximately 20 million, American workers may have, at the time of the survey, been exposed to hazardous substances regulated by the Occupational Safety and Health Administration (OSHA). As many as 50 million people, nearly one-quarter of the population, may have been exposed to one or more such regulated hazardous substances at some time during their working lifetimes.

Most occupational exposures are to multiple, rather than single, chemical agents. Workers are also exposed to chemical and physical hazards in the general environment and as a result of smoking and consumption of alcohol and drugs. One can distinguish three different categories of occupational diseases: (1) those that are caused solely by occupational factors, (2) those in which occupation is one of the causal factors, and (3) those in which occupation affects the course of a preexistent disease.

Exposure to asbestos is perhaps the most serious known occupational health problem in the United States. An estimated 8–10 million people are currently, or have been, exposed to asbestos in the workplace. Asbestosis and mesothelioma are two diseases associated with this exposure.

At least 35,000 textile workers in the United States are permanently disabled as a result of occupational exposure to cotton dust. More than 300,000 people are potentially exposed to the agents in the workplace which are presumed to cause byssinosis.

Workplace exposure to toluene diisocyanate (TDI), used in the manufacture of polyurethane, is a cause of both respiratory and dermatologic conditions. An estimated 100,000 people are exposed to TDI vapor, a potent respiratory irritant and sensitizer; severe symptoms can develop from exposure to very low concentrations.

A recent U.S. Department of Health, Education, and Welfare[8] paper suggests that 20–38 percent of all cancers

[7] Elevated blood pressure is defined as either systolic pressure of 160 mmHg or more or diastolic pressure of 95 mmHg or more. This term is referred to in the HANES reports on blood pressure as "definite hypertension."

[8] National Cancer Institute, National Institute of Environmental Health Sciences, and National Institute for Occupational Safety and Health: Estimates of the Fraction of Cancer in the United States Related to Occupational Factors. September 15, 1978.

may be, in part, related to occupational factors. Although occupational exposures are a factor in virtually every field of clinical medicine, they are seldom taken into account in diagnosing disease. Thus the full extent of occupational diseases suffered by American workers today is not known. However, many workers continue to be exposed to well-known hazards such as lead, mercury, and silica, and suffer from diseases that have been known for centuries to be of occupational origin. At the same time, little is known about the health effects of some of the chemicals that have been developed in recent years and continue to be introduced into commerce at the rate of several hundred per year.

Air quality estimates from the Environmental Protection Agency (EPA) show that the levels of particulate matter and sulfur oxides have improved during this decade, primarily as a result of improvements in industrial proccesses. On the other hand, nitrogen oxide emissions have increased as a result of increased fuel use by electric utilities and increased highway motor vehicle travel. EPA estimates that 29 percent fewer people in 1977 than in 1972 were exposed to annual mean particulate matter levels in excess of the standards. Most of the decrease occurred prior to 1975.[9]

[9] Division of Air Quality, Planning, and Standards: *National Air Quality Emission Trends Report, 1977.* EPA-450/2-78-052. U.S. Environmental Protection Agency. Research Triangle Park, N.C., Dec. 1978.

Table 1. Live births and crude birth rates, according to race, and birth rates, according to age of mother and race: United States, selected years 1950–77

(Data are based on the national vital registration system)

Race and year	Live births	Crude birth rate[1]	Age							
			10-14 years	15-19 years	20-24 years	25-29 years	30-34 years	35-39 years	40-44 years	45-49 years
Total			Live births per 1,000 women							
1950	3,632,000	24.1	1.0	81.6	196.6	166.1	103.7	52.9	15.1	1.2
1955	4,097,000	25.0	0.9	90.3	241.6	190.2	116.0	58.6	16.1	1.0
1960	4,257,850	23.7	0.8	89.1	258.1	197.4	112.7	56.2	15.5	0.9
1965	3,760,358	19.4	0.8	70.5	195.3	161.6	94.4	46.2	12.8	0.8
1970	3,731,386	18.4	1.2	68.3	167.8	145.1	73.3	31.7	8.1	0.5
1975	3,144,198	14.8	1.3	56.3	114.7	110.3	53.1	19.4	4.6	0.3
1976	3,167,788	14.8	1.2	53.3	112.1	108.8	54.5	19.0	4.3	0.2
1977	3,326,632	15.4	1.2	53.7	115.2	114.2	57.5	19.2	4.2	0.2
White										
1950	3,108,000	23.0	0.4	70.0	190.4	165.1	102.6	51.4	14.5	1.0
1955	3,483,000	23.8	0.3	79.1	235.8	186.6	114.0	56.7	15.4	0.9
1960	3,600,744	22.7	0.4	79.4	252.8	194.9	109.6	54.0	14.7	0.8
1965	3,123,860	18.3	0.3	60.6	189.0	158.4	91.6	44.0	12.0	0.7
1970	3,091,264	17.4	0.5	57.4	163.4	145.9	71.9	30.0	7.5	0.4
1975	2,551,996	13.8	0.6	46.8	109.7	110.0	52.1	18.1	4.1	0.2
1976	2,567,614	13.8	0.6	44.6	107.0	108.4	53.5	17.7	3.8	0.2
1977	2,691,070	14.4	0.6	44.6	109.8	113.8	56.3	17.8	3.8	0.2
All other										
1950	524,000	33.3	5.1	163.5	242.6	173.8	112.6	64.3	21.2	2.6
1955	613,000	34.5	4.8	167.2	281.6	218.2	132.6	74.9	22.0	2.1
1960	657,106	32.1	4.0	158.2	294.2	214.6	135.6	74.2	22.0	1.7
1965	636,498	27.6	4.0	138.4	239.2	183.5	113.0	62.7	19.3	1.5
1970	640,122	25.1	4.8	133.4	196.8	140.1	82.5	42.2	12.6	0.9
1975	592,202	21.2	4.7	108.6	143.5	112.1	59.7	27.6	7.6	0.5
1976	600,174	21.1	4.3	102.4	141.7	111.6	60.7	27.0	7.0	0.5
1977	635,562	21.9	4.3	102.4	145.7	116.5	64.8	27.5	6.9	0.5
Black:										
1960	602,264	31.9	4.3	156.1	295.4	218.6	137.1	73.9	21.9	1.1
1965	581,126	27.5	4.3	144.6	243.1	180.4	111.3	61.9	18.7	1.4
1970	572,362	25.3	5.2	147.7	202.7	136.3	79.6	41.9	12.5	1.0
1975	511,581	20.9	5.1	113.8	145.1	105.4	54.1	25.4	7.5	0.5
1976	514,479	20.8	4.7	107.0	143.4	105.5	54.7	24.6	6.8	0.5
1977	544,221	21.7	4.7	107.3	147.7	111.1	58.8	25.1	6.6	0.5

[1] Live births per 1,000 population.

NOTE: Data are based on births adjusted for underregistration for 1950 and 1955; based on registered births for all other years. Figures for 1960, 1965, and 1970 are based on a 50-percent sample of births; for 1975-77, they are based on 100 percent of births in selected States and on a 50-percent sample of births in all other States. Beginning in 1970, births to nonresidents of the United States are excluded.

SOURCE: National Center for Health Statistics: Vital Statistics of the United States, 1977, Vol. 1. Public Health Service, DHEW, Hyattsville, Md. To be published.

Table 2. Birth rates for women 15–44 years of age, according to live-birth order and race: United States, selected years 1950–77

(Data are based on the national vital registration system)

Race and year	Total	Live-birth order				
		1	2	3	4	5 and higher
	Live births per 1,000 women 15–44 years of age					
Total[1]						
1950	106.2	33.3	32.1	18.4	9.2	13.2
1955	118.3	32.8	31.8	23.1	13.3	17.3
1960	118.0	31.1	29.2	22.8	14.6	20.3
1965	96.6	29.8	23.4	16.6	10.7	16.1
1970	87.9	34.2	24.2	13.6	7.2	8.7
1975	66.7	28.4	21.2	9.5	3.9	3.7
1976	65.8	27.9	21.1	9.6	3.8	3.4
1977	67.8	28.6	21.9	10.1	3.9	3.3
White						
1950	102.3	33.3	32.3	17.9	8.4	10.4
1955	113.7	32.6	32.0	22.9	12.6	13.6
1960	113.2	30.8	29.2	22.7	14.1	16.4
1965	91.4	28.9	23.0	16.2	10.2	13.1
1970	84.1	32.9	23.7	13.3	6.8	7.4
1975	63.0	26.9	20.5	8.9	3.6	3.1
1976	62.2	26.5	20.4	9.0	3.4	2.9
1977	64.0	27.3	21.1	9.5	3.5	2.6
Black						
1960	153.5	33.6	29.3	24.0	18.6	48.0
1965	133.9	35.7	26.2	19.4	14.6	38.0
1970	115.4	43.3	27.1	16.1	10.0	18.9
1975	89.2	37.4	24.6	12.8	6.3	8.1
1976	87.2	35.8	24.8	13.1	6.3	7.2
1977	89.8	36.3	26.0	13.9	6.5	7.0

[1] Includes all other races not shown separately.

NOTE: Beginning in 1970, births to nonresidents of the United States are excluded.

SOURCE: National Center for Health Statistics: Vital Statistics of the United States, 1977, Vol. 1. Public Health Service, DHEW, Hyattsville, Md. To be published.

Table 3. Completed fertility rates and parity distribution for women 50–54 years of age at the beginning of selected years 1925–78, according to parity, color, and birth cohort: United States, selected birth cohorts 1871–1928

(Data are based on the national vital registration system)

Color and birth cohort	Age 50-54 as of January 1	Completed fertility rate[1]	Total	Parity (number of children born alive)							
				0	1	2	3	4	5	6	7 or more
Total				Distribution of women[2]							
1871-75	1925	3,773.5	1,000.0	207.2	112.8	124.2	110.0	93.6	75.1	66.4	210.7
1876-80	1930	3,531.9	1,000.0	216.8	123.2	132.0	114.0	93.0	72.0	64.5	184.5
1881-85	1935	3,321.6	1,000.0	217.4	134.6	142.5	119.3	95.0	72.0	57.9	161.3
1886-90	1940	3,136.8	1,000.0	210.4	148.5	153.2	129.7	99.5	68.0	55.4	135.3
1891-95	1945	2,932.6	1,000.0	192.7	172.0	177.2	139.3	97.8	61.5	48.3	111.2
1896-1900	1950	2,675.9	1,000.0	194.6	200.7	195.2	136.6	87.8	53.5	41.5	90.1
1901-05	1955	2,441.4	1,000.0	201.9	227.6	206.2	129.3	80.4	48.6	34.7	71.3
1906-10	1960	2,285.8	1,000.0	215.6	225.1	218.7	131.4	77.5	44.6	29.2	57.9
1911-15	1965	2,354.3	1,000.0	190.1	208.6	238.1	149.8	85.2	46.3	28.8	53.1
1916-20	1970	2,574.0	1,000.0	149.0	179.0	251.7	174.6	102.8	55.8	32.0	55.1
1921-25	1975	2,856.9	1,000.0	108.5	152.1	248.7	197.0	123.5	68.0	39.5	62.7
1924-28	1978	2,999.3	1,000.0	104.3	128.9	236.7	205.5	135.5	76.3	44.2	68.6
White											
1871-75	1925	3,663.6	1,000.0	209.7	112.1	127.9	112.9	95.5	77.2	66.7	198.0
1876-80	1930	3,444.4	1,000.0	218.2	121.9	136.1	116.9	94.8	74.0	64.2	173.9
1881-85	1935	3,253.8	1,000.0	217.6	132.2	147.9	122.4	96.0	74.2	57.8	151.9
1886-90	1940	3,092.9	1,000.0	209.1	144.3	160.3	132.4	100.2	70.3	54.8	128.6
1891-95	1945	2,890.4	1,000.0	191.7	167.5	184.6	141.4	98.0	64.2	47.8	104.8
1896-1900	1950	2,631.5	1,000.0	193.1	192.1	205.9	141.2	89.0	55.2	41.1	82.2
1901-05	1955	2,399.0	1,000.0	197.9	219.5	218.3	135.8	82.3	49.4	33.7	63.1
1906-10	1960	2,248.9	1,000.0	207.9	218.0	233.2	138.8	79.6	44.7	28.0	49.8
1911-15	1965	2,313.5	1,000.0	177.4	204.9	254.1	158.9	88.0	46.1	27.4	43.2
1916-20	1970	2,526.7	1,000.0	134.6	175.9	268.7	185.1	106.5	55.3	30.3	43.6
1921-25	1975	2,793.7	1,000.0	94.2	150.6	264.6	208.8	127.9	67.9	36.9	49.1
1924-28	1978	2,915.7	1,000.0	92.1	128.7	251.1	217.8	140.2	75.8	41.5	52.8
All other											
1871-75	1925	4,770.8	1,000.0	185.7	118.2	93.6	82.0	76.4	56.1	65.3	322.7
1876-80	1930	4,254.7	1,000.0	207.7	134.0	99.5	87.4	79.9	54.7	64.8	272.0
1881-85	1935	3,865.0	1,000.0	223.1	151.5	99.8	96.5	85.3	61.5	64.1	238.2
1886-90	1940	3,451.4	1,000.0	231.9	175.9	105.9	96.6	93.3	52.4	58.0	186.0
1891-95	1945	3,212.5	1,000.0	222.3	206.7	112.4	114.5	92.6	40.4	48.4	162.7
1896-1900	1950	2,967.7	1,000.0	227.4	255.0	114.1	97.5	74.3	38.8	42.6	150.3
1901-05	1955	2,706.7	1,000.0	250.4	275.9	117.8	81.0	62.3	43.0	39.1	130.5
1906-10	1960	2,529.1	1,000.0	287.5	266.6	114.5	73.2	60.1	43.5	35.6	119.0
1911-15	1965	2,641.2	1,000.0	296.1	232.4	116.3	78.3	64.1	46.1	38.9	127.8
1915-20	1970	2,924.2	1,000.0	266.2	202.0	120.9	91.2	72.5	57.8	44.9	144.5
1921-25	1975	3,315.9	1,000.0	217.7	163.5	131.7	108.2	89.0	68.7	56.4	164.8
1924-28	1978	3,590.3	1,000.0	194.1	131.1	132.9	116.9	100.3	79.2	64.1	181.4

Example of use of table: For every 1,000 women 50-54 years of age in 1978, an average of 2,999.3 children were born alive (about 3 children per woman). About 10 percent of the women in this cohort reached 50-54 years of age having had no children, about 13 percent had 1 child, and about 11 percent had 6 children or more.

[1] Number of children born alive to each 1,000 women who have completed their reproductive histories (women 50-54 years of age).
[2] Proportional distribution of each 1,000 women in the cohort by the number of children born alive to them.

SOURCE: National Center for Health Statistics: Fertility Tables for Birth Cohorts by Color, United States, 1917-73 by R. Heuser. DHEW Pub. No. (HRA) 76-1152. Health Resources Administration. Washington. U.S. Government Printing Office, Apr. 1976; data computed from Vital Statistics of the United States, 1977, Vol. 1. Public Health Service, DHEW, Hyattsville, Md. To be published.

Table 4. Selected measures of teenage fertility, according to age and race: United States, 1968–77

(Data are based on the national vital registration system)

Race and year	Age									
	10–14 years	15–17 years	18–19 years	10–14 years	15–17 years	18–19 years	15–17 years	18–19 years	15–17 years	18–19 years
	Live births per 1,000 women			Percent of all live births			Live births to unmarried women per 1,000 unmarried women		Live births to unmarried women per 1,000 total live births	
Total[1]										
1968	1.0	35.1	113.5	0.3	5.5	11.4	14.7	30.0	403.7	201.3
1969	1.0	35.7	112.4	0.3	5.6	11.2	15.2	31.5	412.8	210.7
1970	1.2	38.8	114.7	0.3	6.0	11.3	17.1	32.9	429.8	223.9
1971	1.1	38.3	105.6	0.3	6.4	11.3	17.6	31.7	445.4	232.0
1972	1.2	39.2	97.3	0.4	7.3	11.7	18.6	31.0	458.5	246.8
1973	1.3	38.9	91.8	0.4	7.6	11.7	18.9	30.6	466.9	255.7
1974	1.2	37.7	89.3	0.4	7.4	11.4	19.0	31.4	482.5	270.4
1975	1.3	36.6	85.7	0.4	7.2	11.3	19.5	32.8	513.9	298.1
1976	1.2	34.6	81.3	0.4	6.8	10.8	19.3	32.5	540.2	316.1
1977	1.2	34.5	81.9	0.3	6.4	10.4	20.1	35.0	565.5	343.7
White										
1968	0.4	25.6	100.5	0.1	4.2	10.5	6.2	16.8	234.4	127.4
1969	0.4	26.4	99.2	0.1	4.3	10.2	6.6	17.0	240.3	129.0
1970	0.5	29.2	101.5	0.1	4.6	10.4	7.5	17.6	252.0	135.0
1971	0.5	28.6	92.4	0.1	4.9	10.4	7.4	15.9	251.7	131.7
1972	0.5	29.4	84.5	0.2	5.7	10.7	8.7	15.1	264.4	136.7
1973	0.6	29.5	79.6	0.2	6.0	10.6	8.5	15.0	276.4	142.6
1974	0.6	29.0	77.7	0.2	5.9	10.4	8.9	15.4	294.2	150.1
1975	0.6	28.3	74.4	0.2	5.8	10.3	9.7	16.6	329.6	171.9
1976	0.6	26.7	70.7	0.2	5.4	9.9	9.9	17.0	357.4	187.9
1977	0.6	26.5	71.1	0.2	5.1	9.4	10.7	18.8	389.2	209.5
Black										
1968	4.7	98.2	206.1	1.2	13.1	16.6	---	---	---	---
1969	4.8	96.9	202.5	1.2	13.1	16.7	72.3	129.1	720.9	482.9
1970	5.2	101.4	204.9	1.3	13.4	16.6	77.9	136.4	759.6	521.4
1971	5.1	99.7	193.8	1.3	14.0	16.4	80.9	136.3	796.3	560.3
1972	5.1	99.9	181.7	1.4	15.5	17.0	82.9	129.8	810.1	590.2
1973	5.4	96.8	169.5	1.5	15.8	17.1	81.9	123.0	825.6	603.8
1974	5.0	91.0	162.0	1.4	15.4	17.1	79.4	124.9	848.0	638.3
1975	5.1	86.6	156.0	1.4	14.6	16.8	77.7	126.8	874.0	676.0
1976	4.7	81.5	146.8	1.3	13.9	16.0	74.6	121.6	897.4	709.0
1977	4.7	81.2	147.6	1.2	13.1	15.4	74.3	125.9	904.7	746.4

[1] Includes all other races not shown separately.

NOTE: Beginning in 1970, births to nonresidents of the United States are excluded.

SOURCE: Division of Vital Statistics, National Center for Health Statistics: Selected data.

Table 5. Legal abortions, according to selected characteristics of the patient and of the procedure: United States, 1972–77

(Data are based on reporting by State health departments and by facilities)

Characteristic	Year					
	1972	1973	1974	1975	1976	1977
	Number of legal abortions reported					
Center for Disease Control	586,760	615,831	763,476	854,853	988,267	1,079,430
Alan Guttmacher Institute	---	744,600	898,600	1,034,200	1,179,300	1,320,000
	Percent distribution					
Total	100.0	100.0	100.0	100.0	100.0	100.0
Age						
Under 20 years	32.6	32.7	32.7	33.1	32.1	30.8
20-24 years	32.5	32.0	31.8	31.9	33.3	34.5
25 years and over	34.9	35.3	35.6	35.0	34.6	34.7
Color						
White	77.0	72.5	69.7	67.8	66.6	66.4
All other	23.0	27.5	30.3	32.2	33.4	33.6
Marital status						
Married	29.7	27.4	27.4	26.1	24.6	24.3
Unmarried	70.3	72.6	72.6	73.9	75.4	75.7
Number of living children						
0	49.4	48.6	47.8	47.1	47.7	53.4
1	18.2	18.8	19.6	20.2	20.7	19.1
2	13.3	14.2	14.8	15.5	15.4	14.4
3	8.7	8.7	8.7	8.7	8.3	7.0
4	5.0	4.8	4.5	4.4	4.1	3.3
5 or more	5.4	4.9	4.5	4.2	3.8	2.9
Location of abortion facility						
In State of residence	56.2	74.8	86.6	89.2	90.0	90.0
Out of State of residence	43.8	25.2	13.4	10.8	10.0	10.0
Procedure						
Curettage	88.6	88.4	89.7	90.9	92.8	93.8
Intrauterine instillation	10.4	10.4	7.8	6.2	6.0	5.4
Hysterotomy or hysterectomy	0.6	0.7	0.6	0.4	0.2	0.2
Other	0.5	0.6	1.9	2.4	0.9	0.7
Period of gestation						
Under 9 weeks	34.0	36.1	42.6	44.6	47.0	51.2
9-10 weeks	30.7	29.4	28.7	28.4	28.0	27.2
11-12 weeks	17.5	17.9	15.4	14.9	14.4	13.1
13-15 weeks	8.4	6.9	5.5	5.0	4.5	3.4
16-20 weeks	8.2	8.0	6.5	6.1	5.1	4.3
21 weeks and over	1.3	1.7	1.2	1.0	0.9	0.9

NOTE: Percent distributions exclude cases for which selected characteristic was unknown and are based on abortions reported to the Center for Disease Control.

SOURCE: Center for Disease Control: Abortion Surveillance, 1976. DHEW Pub. No. (CDC) 78-8205. Public Health Service. Washington. U.S. Government Printing Office, Apr. 1978 and Abortion Surveillance, 1977. Public Health Service, DHEW, Atlanta, Ga. To be published; Sullivan, E., Tietze, C., and Dryfoos, J.: Legal abortions in the United States, 1975-1976. Family Planning Perspectives 9(3):116-129, May-June 1977; The Alan Guttmacher Institute: Personal communication, 1979.

Table 6. Legal abortions, abortion-related deaths and death rates, and relative risk of death, according to period of gestation: United States, 1972–74 and 1975–77

(Data are based primarily on reporting by State health departments and by facilities)

Year and period of gestation	Number of legal abortions reported	Abortion-related deaths		Relative risk of death[1]
		Number	Rate per 100,000 abortions	
1972-74				
Total	1,966,067	74	3.8	...
Under 9 weeks	747,550	4	0.5	1.0
9-10 weeks	581,002	14	2.4	4.8
11-12 weeks	330,537	13	3.9	7.8
13-15 weeks	129,536	10	7.7	15.4
16-20 weeks	147,160	27	18.3	36.6
21 weeks and over	30,282	6	19.8	39.6
1975-77				
Total	2,922,550	55	1.9	...
Under 9 weeks	1,398,252	8	0.6	1.0
9-10 weeks	812,549	9	1.1	1.8
11-12 weeks	410,999	7	1.7	2.8
13-15 weeks	124,354	10	8.0	13.3
16-20 weeks	148,036	15	10.1	16.8
21 weeks and over	28,360	6	21.2	35.3

[1] Relative risk based on the index rate of 0.5 for 1972-74 and 0.6 for 1975-77 for the gestation period under 9 weeks.

SOURCE: Center for Disease Control: Abortion Surveillance, 1977. Public Health Service, DHEW, Atlanta, Ga. To be published.

Table 7. Births to ever-married women 15–44 years of age during 5 years prior to interview, according to wantedness and race and age of mother: United States, 1973 and 1976

(Data are based on household interviews of samples of ever-married women in the childbearing ages)

Race and age of mother	Births during 5 years prior to interview[1]		Total[2]	Wanted		Wanted later[3]		Unwanted	
	1973	1976		1973	1976	1973	1976	1973	1976
	Number in thousands		Percent distribution						
Total[4]	16,078	15,233	100.0	85.6	88.3	24.2	23.4	14.2	10.6
15-24 years	5,136	4,584	100.0	91.9	92.4	39.8	38.3	8.1	* 6.1
25-34 years	9,164	9,071	100.0	86.3	89.4	18.3	18.3	13.6	9.6
35-44 years	1,779	1,577	100.0	64.4	69.9	* 9.4	* 9.1	35.4	29.1
White	14,085	13,121	100.0	87.6	89.9	23.5	23.4	12.2	8.9
15-24 years	4,354	3,863	100.0	93.2	93.7	38.6	39.3	* 6.7	* 4.7
25-34 years	8,203	7,977	100.0	88.3	90.8	18.0	18.1	11.5	8.2
35-44 years	1,528	1,280	100.0	67.8	73.2	* 9.7	* 8.3	31.9	25.8
Black	1,782	1,736	100.0	69.8	74.8	29.0	24.5	30.1	23.8
15-24 years	743	664	100.0	83.4	83.9	45.6	*35.6	*16.6	*15.0
25-34 years	837	840	100.0	65.8	74.7	20.0	*18.0	34.1	*23.6
35-44 years	202	231	100.0	*36.6	*48.7	* 5.6	*16.5	63.4	*30.0

[1] Multiple births counted only once.
[2] Percents do not add to total because the "wantedness" of a small proportion of births was undetermined.
[3] Included in "wanted" category.
[4] Includes all other races not shown separately.

SOURCE: Division of Vital Statistics, National Center for Health Statistics: Data from the National Survey of Family Growth.

Table 8. Death rates due to all causes, according to race, sex, and age: United States, selected years 1950–77

(Data are based on the national vital registration system)

Race, sex, and age	Year							
	1950	1955	1960	1965	1970[1]	1975[1]	1976[1]	1977[1]
Total[2]	Number of deaths per 100,000 resident population							
All ages, age adjusted[3]	841.5	764.6	760.9	739.0	714.3	638.3	627.5	612.3
All ages, crude	963.8	930.4	954.7	944.6	945.3	888.5	889.6	878.1
Under 1 year	754.6	2,848.5	2,696.4	2,463.3	2,142.4	1,641.0	1,595.0	1,485.6
1-4 years		113.4	109.1	95.9	84.5	70.8	69.9	68.8
5-9 years	61.7	50.6	49.0	43.9	42.1	35.7	34.8	34.0
10-14 years	58.1	46.6	44.0	40.5	40.6	35.7	34.6	35.1
15-19 years	108.6	97.3	92.2	95.3	110.3	101.5	97.1	101.6
20-24 years	146.0	134.9	123.6	126.6	148.0	138.2	131.3	133.5
25-29 years	159.3	135.5	130.8	134.0	144.2	136.7	129.3	132.1
30-34 years	199.4	163.0	160.7	167.9	172.9	151.0	144.8	140.9
35-39 years	283.7	238.6	233.6	242.4	247.1	209.6	198.4	195.5
40-44 years	441.3	379.8	370.2	370.0	377.0	326.1	313.4	304.7
45-49 years	682.2	592.4	590.9	583.3	584.1	512.4	498.1	482.3
50-54 years	1,042.2	947.1	943.1	924.0	889.3	784.6	767.7	754.7
55-59 years	1,562.3	1,406.5	1,385.0	1,334.9	1,361.0	1,199.8	1,175.0	1,138.1
60-64 years	2,329.0	2,097.8	2,148.3	2,120.9	2,003.5	1,832.7	1,822.8	1,784.9
65-69 years	3,328.2	3,168.2	3,141.7	3,045.3	2,969.2	2,574.7	2,541.5	2,480.4
70-74 years	5,152.0	4,695.1	4,720.6	4,420.6	4,370.8	4,050.5	3,948.3	3,847.1
75-79 years	7,979.3	7,367.2	7,204.0	6,980.3	6,721.8	6,205.1	6,186.7	6,073.0
80-84 years	11,840.8	11,467.0	11,724.0	10,814.6	10,157.8	9,102.6	9,034.4	8,814.7
85 years and over	20,193.4	18,983.3	19,857.5	20,069.0	16,344.9	15,187.9	15,486.9	14,725.9
White male								
All ages, age adjusted[3]	963.1	905.0	917.7	911.1	893.4	812.7	798.8	781.5
All ages, crude	1,089.5	1,069.6	1,098.5	1,087.6	1,086.7	1,015.3	1,010.4	998.2
Under 1 year	766.4	2,877.9	2,694.1	2,409.0	2,113.2	1,594.4	1,511.8	1,429.7
1-4 years		109.6	104.9	91.5	83.6	71.3	71.9	69.7
5-9 years	67.3	56.7	53.7	47.5	47.5	39.4	38.3	38.4
10-14 years	67.1	56.4	51.6	48.7	48.5	43.3	42.8	42.5
15-19 years	130.5	132.1	125.2	130.8	147.1	144.5	138.1	145.8
20-24 years	173.0	182.5	166.9	171.0	199.0	189.5	182.4	190.0
25-29 years	170.1	158.0	152.1	157.3	169.2	168.9	159.8	167.3
30-34 years	201.1	176.2	173.2	178.3	185.4	169.5	164.2	164.2
35-39 years	293.4	258.5	253.4	258.3	260.4	230.2	219.2	219.3
40-44 years	475.6	423.2	417.0	411.5	420.0	363.5	352.2	339.7
45-49 years	773.7	700.4	709.3	687.1	684.6	606.0	586.6	565.1
50-54 years	1,213.6	1,154.9	1,183.3	1,157.1	1,098.6	971.3	940.9	925.4
55-59 years	1,881.4	1,760.8	1,784.6	1,751.5	1,774.6	1,534.6	1,496.4	1,440.0
60-64 years	2,805.7	2,645.5	2,751.4	2,801.2	2,708.4	2,443.7	2,407.9	2,338.0
65-69 years	4,067.0	3,964.8	4,050.7	4,061.8	4,046.1	3,590.9	3,542.9	3,436.4
70-74 years	6,038.3	5,720.5	5,909.2	5,778.8	5,828.0	5,462.2	5,340.8	5,233.9
75-79 years	9,060.0	8,649.8	8,698.7	8,741.9	8,693.4	8,253.6	8,246.8	8,104.6
80-84 years	13,369.7	13,292.3	13,544.3	13,073.5	12,606.8	11,832.0	11,774.4	11,597.5
85 years and over	22,132.6	20,063.6	21,750.0	22,733.6	18,551.7	18,257.9	18,767.6	18,041.7

See footnotes at end of table.

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Table 8. Death rates due to all causes, according to race, sex, and age: United States, selected years 1950–77—Continued

(Data are based on the national vital registration system)

Race, sex, and age	Year							
	1950	1955	1960	1965	1970[1]	1975[1]	1976[1]	1977[1]
White female	Number of deaths per 100,000 resident population							
All ages, age adjusted[3]	645.0	572.8	555.0	527.6	501.7	445.3	439.6	427.8
All ages, crude	803.3	777.4	801.0	800.8	812.6	783.8	793.6	783.3
Under 1 year	586.5	2,167.5	2,007.7	1,801.3	1,614.6	1,222.3	1,192.1	1,094.8
1-4 years		90.3	85.2	74.6	66.1	57.1	55.9	55.0
5-9 years	48.2	39.0	38.3	33.8	32.0	27.5	26.9	25.6
10-14 years	41.3	31.8	30.8	28.0	27.9	24.4	24.2	25.0
15-19 years	62.3	53.9	50.3	50.1	57.8	52.4	52.6	55.2
20-24 years	79.8	64.7	60.4	63.1	65.7	59.8	57.0	59.3
25-29 years	97.4	74.1	71.6	70.6	73.1	64.1	61.8	61.4
30-34 years	128.9	101.0	97.1	101.6	97.2	84.3	80.9	78.3
35-39 years	187.8	154.7	147.5	150.8	150.9	124.0	119.2	115.6
40-44 years	288.8	246.8	237.9	235.7	232.0	206.9	194.0	191.7
45-49 years	443.5	369.2	368.5	376.1	373.6	326.6	319.0	309.7
50-54 years	657.8	575.9	560.3	567.4	559.5	499.7	488.4	480.1
55-59 years	1,017.6	879.6	829.7	799.8	830.8	761.6	751.0	726.2
60-64 years	1,621.1	1,385.7	1,362.2	1,281.8	1,222.9	1,149.5	1,157.7	1,144.0
65-69 years	2,520.9	2,304.4	2,154.9	2,025.9	1,924.5	1,662.7	1,651.5	1,632.7
70-74 years	4,265.2	3,718.0	3,583.2	3,231.3	3,134.1	2,798.8	2,721.9	2,634.6
75-79 years	7,048.5	6,396.3	6,084.2	5,697.3	5,349.8	4,801.8	4,745.3	4,603.3
80-84 years	11,061.8	10,526.4	10,654.3	9,587.5	8,869.4	7,813.5	7,743.4	7,494.9
85 years and over	19,676.8	19,156.1	19,477.7	19,353.7	15,980.2	14,494.1	14,823.3	14,039.7
All other male								
All ages, age adjusted[3]	1,358.5	1,187.5	1,211.0	1,217.2	1,231.4	1,097.5	1,072.1	1,045.9
All ages, crude	1,251.1	1,133.3	1,152.0	1,121.3	1,115.9	999.1	983.5	967.1
Under 1 year	1,438.8	5,348.3	5,189.4	4,871.1	4,020.0	3,001.1	3,012.4	2,780.4
1-4 years		212.2	207.3	178.3	144.7	108.8	107.5	108.1
5-9 years	98.2	77.2	72.3	70.4	62.2	55.9	54.8	51.6
10-14 years	95.8	75.5	78.8	65.0	67.8	57.4	49.9	53.9
15-19 years	216.6	168.6	165.8	172.8	224.0	164.3	149.8	145.0
20-24 years	365.4	316.0	274.9	292.0	415.5	340.7	300.1	276.6
25-29 years	429.4	379.9	343.0	392.2	456.6	435.8	389.9	382.0
30-34 years	573.0	430.6	428.6	458.4	558.8	477.1	436.6	415.1
35-39 years	702.0	566.4	599.2	662.8	723.7	630.8	580.5	560.8
40-44 years	1,039.0	880.4	876.5	948.6	1,024.3	844.7	811.3	793.0
45-49 years	1,458.5	1,311.5	1,241.5	1,324.6	1,395.1	1,166.4	1,138.3	1,100.8
50-54 years	2,332.7	1,889.0	1,916.2	1,887.4	1,935.3	1,690.0	1,683.3	1,624.2
55-59 years	3,266.3	2,693.7	2,500.5	2,492.6	2,639.5	2,392.8	2,352.8	2,310.8
60-64 years	4,274.0	3,874.9	4,053.8	3,940.8	3,534.4	3,280.8	3,371.4	3,360.1
65-69 years	4,605.4	4,580.3	5,103.7	4,853.1	4,759.2	4,036.7	3,963.4	3,795.2
70-74 years	6,340.5	6,088.5	6,493.2	6,433.9	6,557.3	6,534.9	6,394.1	6.196.1
75-79 years	8,864.1	7,169.9	7,628.0	8,180.5	8,483.1	8,254.3	8,428.5	8,650.4
80-84 years	9,291.9	9,695.2	11,017.4	9,725.4	9,855.8	9,167.4	9,010.0	8,986.0
85 years and over	15,742.1	13,766.7	15,236.7	15,761.8	11,405.2	11,693.8	11,519.1	11,286.1

See footnotes at end of table.

Table 8. Death rates due to all causes, according to race, sex, and age: United States, selected years 1950–77—Continued

(Data are based on the national vital registration system)

Race, sex, and age	Year							
	1950	1955	1960	1965	1970[1]	1975[1]	1976[1]	1977[1]
Black male:	Number of deaths per 100,000 resident population							
All ages, age adjusted[3]	1,373.1	---	1,246.1	1,270.3	1,318.6	1,174.3	1,151.1	1,127.6
All ages, crude	1,260.3	---	1,181.7	1,163.0	1,186.6	1,064.0	1,051.8	1,037.0
Under 1 year	1,412.6	---	5,306.8	5,039.9	4,298.9	3,253.5	3,282.8	3,038.7
1-4 years		---	208.5	182.3	150.5	114.6	112.9	113.6
5-9 years	95.3	---	71.9	72.0	65.1	57.6	57.0	53.6
10-14 years	94.8	---	79.2	65.8	63.8	57.1	50.7	55.7
15-19 years	216.0	---	165.5	176.6	230.9	167.4	147.3	143.0
20-24 years	366.9	---	271.8	300.0	448.8	357.3	316.7	287.2
25-29 years	433.5	---	356.3	404.4	505.4	476.8	422.3	412.8
30-34 years	583.1	---	447.4	489.4	622.3	551.4	486.5	465.8
35-39 years	713.0	---	627.9	704.9	794.9	671.2	629.0	610.0
40-44 years	1,066.0	---	912.3	1,007.3	1,117.3	924.4	883.9	862.9
45-49 years	1,496.2	---	1,296.7	1,395.9	1,514.9	1,270.2	1,240.1	1,206.2
50-54 years	2,393.2	---	2,016.7	1,986.4	2,075.3	1,822.9	1,828.0	1,765.1
55-59 years	3,325.3	---	2,664.5	2,633.8	2,825.8	2,548.0	2,522.4	2,472.3
60-64 years	4,382.7	---	4,199.6	4,226.9	3,778.7	3,466.3	3,569.3	3,565.0
65-69 years	4,668.8	---	5,226.5	5,039.8	5,051.3	4,201.5	4,118.2	3,937.4
70-74 years	6,436.0	---	6,664.5	6,559.0	6,936.6	7,045.5	6,932.8	6,699.0
75-79 years		---	7,633.7	8,461.4	8,827.8	9,080.2	9,426.9	9,886.7
80-84 years	10,101.9	---	10,737.1	9,919.6	10,629.9	9,738.7	9,555.1	9,853.8
85 years and over		---	14,844.8	15,966.7	12,222.3	12,450.9	12,375.0	12,030.0
All other female								
All ages, age adjusted[3]	1,095.7	909.9	893.3	831.4	770.8	648.3	635.1	621.3
All ages, crude	993.5	875.9	872.6	822.6	775.3	682.5	680.0	672.5
Under 1 year	1,163.0	4,282.1	4,067.1	3,872.7	3,169.4	2,523.0	2,542.2	2,304.5
1-4 years		185.7	174.4	156.7	123.3	93.0	86.1	87.1
5-9 years	80.1	61.1	61.0	54.5	46.0	36.8	35.4	34.3
10-14 years	69.1	48.6	44.2	40.2	38.6	31.6	29.0	28.0
15-19 years	176.6	91.2	80.4	80.2	84.7	65.4	56.9	62.8
20-24 years	253.9	164.5	135.8	121.6	138.1	110.7	107.2	99.1
25-29 years	330.9	234.0	210.2	189.2	185.2	141.7	139.3	131.7
30-34 years	457.2	322.2	307.8	288.0	250.0	183.4	180.7	165.6
35-39 years	613.6	477.6	448.1	435.6	395.7	288.9	261.8	256.1
40-44 years	924.4	686.4	660.8	637.7	586.3	434.7	426.1	404.1
45-49 years	1,246.8	1,051.4	919.4	870.5	829.0	657.8	625.6	599.7
50-54 years	1,940.7	1,567.9	1,419.5	1,246.4	1,153.0	914.1	928.6	914.5
55-59 years	2,630.0	2,109.9	1,951.8	1,677.8	1,606.4	1,367.4	1,312.6	1,307.5
60-64 years	3,579.3	2,872.4	3,019.5	2,849.3	2,218.8	1,939.0	1,917.0	1,895.0
65-69 years	3,346.8	3,348.5	3,474.4	3,206.2	3,129.5	2,331.0	2,229.2	2,176.1
70-74 years	5,153.9	4,472.4	4,742.5	4,257.2	4,488.4	4,667.0	4,452.1	4,298.6
75-79 years	7,014.5	6,156.8	5,879.2	5,714.0	5,782.2	5,832.0	6,132.6	6,450.8
80-84 years	7,220.0	6,892.2	8,477.5	7,868.8	7,421.5	6,180.9	6,333.6	6,265.0
85 years and over	13,426.9	11,214.7	12,871.2	12,998.0	10,288.9	9,177.3	9,175.2	8,673.5

See footnotes at end of table.

Table 8. Death rates due to all causes, according to race, sex, and age: United States, selected years 1950–77—Continued

(Data are based on the national vital registration system)

Race, sex, and age	Year							
	1950	1955	1960	1965	1970[1]	1975[1]	1976[1]	1977[1]
Black female:	Number of deaths per 100,000 resident population							
All ages, age adjusted[3]	1,106.7	---	916.9	859.9	814.4	688.4	676.4	664.4
All ages, crude	1,002.0	---	905.0	860.6	829.2	735.5	735.7	730.6
Under 1 year	1,139.3	---	4,162.2	4,001.1	3,368.8	2,740.3	2,738.1	2,509.6
1-4 years		---	173.3	159.3	129.4	96.9	92.1	91.0
5-9 years	78.2	---	61.8	56.2	47.6	37.7	37.0	35.6
10-14 years	66.6	---	44.1	40.2	40.1	31.7	29.0	28.3
15-19 years	172.7	---	81.3	81.0	86.2	65.8	57.3	62.0
20-24 years	251.3	---	138.1	125.5	144.1	115.1	110.7	102.7
25-29 years	330.5	---	220.6	195.9	198.3	150.8	150.5	143.8
30-34 years	463.6	---	323.5	304.6	267.8	196.8	196.3	178.2
35-39 years	615.7	---	467.3	457.9	428.4	308.7	278.0	275.8
40-44 years	930.1	---	682.5	668.3	637.6	473.4	456.9	440.6
45-49 years	1,262.7	---	943.4	908.4	887.0	715.5	687.6	658.4
50-54 years	1,969.8	---	1,460.5	1,288.6	1,222.0	990.8	1,009.0	998.5
55-59 years	2,674.4	---	2,051.1	1,739.7	1,688.5	1,454.8	1,396.0	1,397.3
60-64 years	3,633.3	---	3,113.2	2,992.2	2,335.8	2,019.6	2,005.7	1,987.4
65-69 years	3,363.2	---	3,551.9	3,324.4	3,285.3	2,387.6	2,281.3	2,234.5
70-74 years	5,201.2	---	4,832.6	4,351.9	4,728.5	5,025.3	4,803.8	4,606.8
75-79 years		---	5,931.2	5,869.3	6,059.7	6,390.4	6,800.6	7,271.0
80-84 years	8,347.0	---	8,437.3	7,926.0	7,761.0	6,472.9	6,698.4	6,618.5
85 years and over		---	13,052.6	13,143.5	10,706.6	9,558.6	9,554.1	9,035.3

[1] Excludes deaths of nonresidents of the United States.
[2] Includes all races and both sexes.
[3] Age adjusted by the direct method to the total population of the United States as enumerated in 1940, using 11 age groups.

SOURCES: National Center for Health Statistics: Vital Statistics of the United States, Vol. II, for data years 1950-1970 and 1975, Washington. U.S. Government Printing Office; for data years 1976-1977, Public Health Service, DHEW, Hyattsville, Md. To be published; Data computed by the Division of Analysis from data compiled by the Division of Vital Statistics; U.S. Bureau of the Census: Population estimates and projections. Current Population Reports. Series P-25, Nos. 310, 519, 643, and 721. Washington. U.S. Government Printing Office, June 1965, Apr. 1974, Jan. 1977, and Apr. 1978; 1950 Nonwhite Population by Race, Special report P-E No. 3B; General population characteristics, United States summary, 1960 and 1970, U.S. Census of Population. Final reports PC(1)-1B and PC(1)-B1; Washington. U.S. Government Printing Office, 1951, 1961, and 1972.

Table 9. Life expectancy at birth and at 65 years of age, according to color and sex: United States, selected years 1900–1977

(Data are based on the national vital registration system)

Specified age and year	Total			White			All other		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
At birth	Remaining life expectancy in years								
1900[1]	47.3	46.3	48.3	47.6	46.6	48.7	33.0	32.5	33.5
1950	68.2	65.6	71.1	69.1	66.5	72.2	60.8	59.1	62.9
1960	69.7	66.6	73.1	70.6	67.4	74.1	63.6	61.1	66.3
1970[2]	70.9	67.1	74.8	71.7	68.0	75.6	65.3	61.3	69.4
1975[2]	72.5	68.7	76.5	73.2	69.4	77.2	67.9	63.6	72.3
1976[2]	72.8	69.0	76.7	73.5	69.7	77.3	68.3	64.1	72.6
1977[2]	73.2	69.3	77.1	73.8	70.0	77.7	68.8	64.6	73.1
At 65 years									
1900-1902[1]	11.9	11.5	12.2	—	11.5	12.2	—	10.4	11.4
1950	13.9	12.8	15.0	—	12.8	15.1	—	12.5	14.5
1960	14.3	12.8	15.8	14.4	12.9	15.9	13.9	12.7	15.2
1970[2]	15.2	13.1	17.0	15.2	13.1	17.1	14.9	13.3	16.4
1975[2]	16.0	13.7	18.0	16.0	13.7	18.1	15.7	13.7	17.5
1976[2]	16.0	13.7	18.0	16.1	13.7	18.1	15.8	13.8	17.6
1977[2]	16.3	13.9	18.3	16.3	13.9	18.4	16.0	14.0	17.8

[1] Death registration area only. The death registration area increased from 10 States and the District of Columbia in 1900 to the coterminous United States in 1933.
[2] Excludes deaths of nonresidents of the United States.

SOURCES: National Center for Health Statistics: Vital Statistics Rates in the United States 1940-1960, by R.D. Grove and A.M. Hetzel. DHEW Pub. No. (PHS) 1677. Public Health Service. Washington. U.S. Government Printing Office, 1968; Vital Statistics of the United States, 1970, Vol. II, Part A. DHEW Pub. No. (HRA) 75-1101. Health Resources Administration. Washington. U.S. Government Printing Office, 1974; Final mortality statistics, 1975-1977. Monthly Vital Statistics Report. Vols. 25, 26, and 28, Nos. 11, 12, and 1. DHEW Pub. Nos. (HRA) 77-1120, (PHS) 78-1120, (PHS) 79-1120. Health Resources Administration and Public Health Service. Washington. U.S. Government Printing Office, Feb. 11, 1977, March 30, 1978, and May 11, 1979; Unpublished data from the Division of Vital Statistics.

Table 10. Infant, late fetal, and perinatal mortality rates, according to race: United States, selected years 1950–77

(Data are based on the national vital registration system)

Race and year	Infant mortality rate[1]				Late fetal mortality rate[2]	Perinatal mortality rate[3]
	Total	Neonatal		Post-neonatal		
		Under 28 days	Under 7 days			
Total	Number of deaths per 1,000 live births					
1950	29.2	20.5	17.8	8.7	14.9	32.5
1955	26.4	19.1	17.0	7.3	12.9	29.7
1960	26.0	18.7	16.7	7.3	12.1	28.6
1965	24.7	17.7	15.9	7.0	11.9	27.6
1970[4]	20.0	15.1	13.6	4.9	9.5	23.0
1975[4]	16.1	11.6	10.0	4.5	7.8	17.7
1976[4]	15.2	10.9	9.3	4.3	7.5	16.7
1977[4]	14.1	9.9	8.4	4.2	7.1	15.4
White						
1950	26.8	19.4	17.1	7.4	13.3	30.1
1955	23.6	17.7	15.9	5.9	11.6	27.3
1960	22.9	17.2	15.6	5.7	10.8	26.2
1965	21.5	16.1	14.6	5.4	10.5	25.0
1970[4]	17.8	13.8	12.5	4.0	8.6	21.1
1975[4]	14.2	10.4	9.0	3.8	7.1	16.0
1976[4]	13.3	9.7	8.2	3.6	6.9	15.1
1977[4]	12.3	8.7	7.4	3.6	6.5	13.9
All other						
1950	44.5	27.5	22.8	16.9	24.8	47.0
1955	42.8	27.2	22.9	15.6	20.5	43.0
1960	43.2	26.9	22.9	16.4	19.2	41.6
1965	40.3	25.4	22.1	14.9	18.8	40.5
1970[4]	30.9	21.4	19.1	9.5	13.9	32.7
1975[4]	24.2	16.8	14.4	7.5	10.8	25.0
1976[4]	23.5	16.3	13.9	7.2	10.1	23.8
1977[4]	21.7	14.7	12.3	7.0	9.5	21.7
Black:						
1950	43.9	27.8	23.0	16.1	---	---
1955	43.1	27.8	23.5	15.3	---	---
1960	44.3	27.8	23.7	16.5	---	---
1965	41.7	26.5	23.1	15.2	---	---
1970[4]	32.6	22.8	20.3	9.9	---	---
1975[4]	26.2	18.3	15.7	7.9	---	---
1976[4]	25.5	17.9	15.3	7.6	---	---
1977[4]	23.6	16.1	13.5	7.6	---	---

[1] Infant mortality rate is the number of deaths to infants under 1 year of age per 1,000 live births. Neonatal deaths are deaths within 28 days of birth, and postneonatal deaths are from 28 days to 365 days. Deaths within 7 days are considered early neonatal deaths.
[2] Late fetal deaths are fetal deaths of 28 weeks or more gestation. The rate is the number of late fetal deaths per 1,000 live births and late fetal deaths.
[3] Perinatal deaths are late fetal deaths plus infant deaths within 7 days of birth. The rate is the number of perinatal deaths per 1,000 live births and late fetal deaths.
[4] Excludes births and infant and late fetal deaths occurring to nonresidents of the United States.

SOURCES: National Center for Health Statistics: Vital Statistics of the United States, Vol. II, for data years 1950-1970 and 1975. Washington, U.S. Government Printing Office; for 1976-1977, Public Health Service, DHEW, Hyattsville, Md. To be published; Data computed by the Division of Analysis from data compiled by the Division of Vital Statistics.

Table 11. Infant mortality rates, according to race, geographic division, and State: United States, average annual 1965–67, 1970–72, and 1975–77

(Data are based on the national vital registration system)

Geographic division and State	1965-67			1970-72[2]			1975-77[2]		
	Total[1]	White	Black	Total[1]	White	Black	Total[1]	White	Black
	Infant deaths per 1,000 live births								
United States	23.6	20.6	39.8	19.2	17.1	30.9	15.1	13.3	25.1
New England	21.2	20.4	36.7	16.8	16.2	30.0	12.8	12.2	23.6
Maine	22.6	22.6	*27.3	19.2	19.2	*24.4	11.2	11.3	* 5.2
New Hampshire	21.1	21.0	*46.5	17.4	17.4	*25.0	11.6	11.7	* 9.1
Vermont	21.9	21.9	*20.4	15.4	15.5	* -	11.9	12.0	* -
Massachusetts	21.1	20.4	36.9	16.2	15.5	29.7	12.5	12.1	19.9
Rhode Island	21.3	20.3	46.8	19.5	18.8	34.6	13.7	13.0	27.0
Connecticut	20.8	19.3	35.3	16.5	15.0	29.9	14.4	12.7	27.4
Middle Atlantic	22.6	19.7	39.5	18.6	16.3	30.8	15.3	13.2	25.1
New York	22.7	19.6	39.0	18.5	16.2	29.9	15.5	13.2	24.8
New Jersey	22.5	18.7	40.8	18.7	15.7	31.9	14.7	12.4	24.9
Pennsylvania	22.6	20.4	39.4	18.8	16.9	32.1	15.3	13.7	26.1
East North Central	22.7	20.5	38.7	19.2	17.1	31.7	15.2	13.3	26.5
Ohio	21.4	19.8	35.5	18.4	16.8	30.5	14.9	13.6	24.0
Indiana	22.9	21.5	37.2	19.0	17.9	29.5	14.5	13.5	23.7
Illinois	24.8	21.0	41.9	21.0	17.7	33.7	17.0	13.7	29.8
Michigan	22.7	20.5	37.7	19.5	17.2	31.2	15.2	13.2	25.3
Wisconsin	20.6	20.1	32.5	15.7	15.1	27.2	12.5	12.0	21.1
West North Central	21.3	19.9	40.1	18.1	17.2	30.7	14.0	13.1	25.5
Minnesota	19.9	19.6	38.4	17.4	17.2	25.4	12.8	12.5	23.9
Iowa	19.7	19.5	29.3	17.9	17.7	30.9	13.4	13.1	28.1
Missouri	23.9	20.5	42.8	19.2	17.1	31.0	15.3	13.4	25.9
North Dakota	21.0	20.3	*27.6	14.8	14.5	*29.9	14.1	13.4	*19.7
South Dakota	23.3	20.9	*26.7	19.0	16.9	*46.9	16.5	14.5	*28.9
Nebraska	20.3	19.6	32.0	18.0	17.2	36.8	13.6	13.2	25.2
Kansas	20.4	19.4	35.2	18.1	17.4	28.6	13.8	13.1	24.1
South Atlantic	26.9	21.2	40.6	21.0	17.3	31.0	16.9	13.6	25.2
Delaware	22.5	17.9	41.4	18.1	14.2	32.8	13.6	11.7	20.7
Maryland	23.4	20.0	35.9	17.9	15.0	27.9	16.2	13.5	23.7
District of Columbia	31.3	22.8	33.7	28.3	21.4	29.5	27.2	15.4	29.6
Virginia	25.4	21.3	38.7	20.6	17.5	32.1	16.5	13.8	25.9
West Virginia	26.1	25.4	40.2	21.1	20.7	32.0	16.6	16.2	25.9
North Carolina	28.8	21.4	45.4	23.1	18.8	34.1	17.3	13.9	25.4
South Carolina	29.7	21.6	41.6	22.4	17.2	31.4	18.8	14.2	26.2
Georgia	27.8	20.6	41.2	20.9	16.8	29.8	16.5	13.1	23.0
Florida	26.4	20.8	41.5	20.3	16.9	30.6	16.1	12.8	25.7
East South Central	29.1	22.8	44.7	22.3	18.3	33.5	17.3	14.1	26.1
Kentucky	24.8	23.2	41.5	18.8	18.0	26.7	14.9	14.3	21.4
Tennessee	26.2	22.4	39.6	20.9	18.3	30.7	15.9	13.7	24.1
Alabama	29.0	22.3	41.2	23.4	18.0	34.4	18.7	14.3	26.9
Mississippi	38.4	23.5	51.7	27.2	19.1	36.2	20.6	14.1	27.9

See footnotes at end of table.

Table 11. Infant mortality rates, according to race, geographic division, and State: United States, average annual 1965–67, 1970–72, and 1975–77—Continued

(Data are based on the national vital registration system)

Geographic division and State	1965-67			1970-72[2]			1975-77[2]		
	Total[1]	White	Black	Total[1]	White	Black	Total[1]	White	Black
	Infant deaths per 1,000 live births								
West South Central	25.4	21.6	39.4	20.9	18.8	29.9	16.2	14.1	25.1
Arkansas	25.2	20.6	36.4	19.9	17.8	26.4	16.3	13.8	24.1
Louisiana	28.6	20.2	41.2	22.9	18.8	29.7	18.0	13.2	25.6
Oklahoma	22.4	20.7	37.5	19.6	18.8	32.3	15.5	14.7	24.7
Texas	24.9	22.3	38.8	20.7	18.9	30.7	15.7	14.2	25.1
Mountain	23.3	21.9	34.2	18.2	17.5	26.3	13.7	13.2	21.1
Montana	23.8	22.6	*49.8	21.3	21.3	*23.0	15.2	15.2	*16.7
Idaho	21.6	21.5	* 6.7	17.0	16.7	* -	12.5	12.5	* 5.8
Wyoming	23.1	22.8	*25.4	23.2	22.8	*39.3	15.8	15.8	*20.2
Colorado	23.6	23.1	35.6	18.4	18.4	21.0	13.1	12.8	20.6
New Mexico	26.2	24.1	31.3	20.0	18.7	28.4	15.4	14.7	27.9
Arizona	25.3	21.9	36.8	17.7	16.2	26.3	14.5	13.4	19.7
Utah	17.8	17.4	*28.6	14.2	14.2	*15.7	11.6	11.3	*22.5
Nevada	23.0	22.1	31.3	21.1	19.6	34.6	15.1	14.6	21.3
Pacific	20.9	20.0	32.7	16.8	16.2	26.4	12.8	12.4	20.6
Washington	20.6	19.6	38.0	18.1	17.6	31.0	14.1	13.9	19.2
Oregon	20.6	20.3	34.2	17.0	16.9	23.8	13.2	13.1	21.0
California	20.8	20.0	32.2	16.5	15.7	26.2	12.6	12.0	20.7
Alaska	33.0	21.8	55.1	19.7	18.8	35.6	15.3	13.1	25.9
Hawaii	19.0	17.3	33.6	17.1	17.3	*15.6	11.7	11.9	*13.7

[1] Includes all other races not shown separately.
[2] Excludes births and infant deaths occurring to nonresidents of the United States.

SOURCE: National Center for Health Statistics: Data computed by the Division of Analysis from data compiled by the Division of Vital Statistics.

Table 12. Infant mortality rates and perinatal mortality ratios: Selected countries, selected years 1972–77

(Data are based on national vital registration systems)

Country	Infant mortality rate		Average annual percent change	Perinatal mortality ratio[2]		Average annual percent change
	1972	1977[1]		1972	1976[3]	
	Infant deaths per 1,000 live births			Perinatal deaths per 1,000 live births		
Canada	17.1	14.3	-5.8	19.2	14.9	-8.1
United States	18.5	14.1	-5.3	21.9	17.3	-5.7
Sweden	10.8	8.0	-5.8	14.4	---	...
England and Wales	17.2	13.7	-4.4	22.0	17.9	-5.0
Netherlands	11.7	9.5	-4.1	16.7	14.5	-3.5
German Democratic Republic	17.6	13.1	-5.7	19.4	17.6	-3.2
German Federal Republic	22.7	17.4	-6.4	24.1	19.4	-7.0
France	16.0	[4]11.4	-6.6	[4]18.8	[4,5]17.0	-4.9
Switzerland	13.3	10.7	-5.3	16.3	13.2	-5.1
Italy	27.0	17.6	-8.2	29.6	[5]26.5	-5.4
Israel	21.3	22.9	2.4	20.7	20.9	0.2
Japan	11.7	9.3	-5.6	19.0	14.8	-6.1
Australia	16.7	14.3	-5.0	---	---	...

[1] Data for Canada, Israel, and Australia refer to 1975; data for German Federal Republic, Switzerland, and Japan refer to 1976; all 1977 data are provisional, except for the United States.

[2] Fetal deaths of 28 weeks or more gestation plus infant deaths within 7 days per 1,000 live births. For all countries, fetal deaths of unknown gestation period are included in the 28 weeks or more gestation. This is not the usual way of calculating the perinatal ratio for the United States, but it was done for the purpose of comparison.

[3] Data for France and Italy refer to 1974; data for Canada, German Democratic and Federal Republics, and Israel refer to 1975.

[4] Excludes infants who have died before registration of birth.

[5] Fetal deaths are of 26 weeks or more gestation.

SOURCE: United Nations Demographic Yearbook 1973-1974, 1976, and 1977. Pub. Nos. ST/STAT/SER.R/2, ST/ESA/STAT/R.3, ST/ESA/STAT/SER.R/4, and ST/ESA/STAT/SER.R/6. New York. United Nations, 1974, 1975, 1977, 1978.

Table 13. Life expectancy at birth, according to sex: Selected countries, 1970 and 1976

(Data are based on reporting by countries)

Country	Male		Average annual change in years	Female		Average annual change in years
	1970[1]	1976[2]		1970[1]	1976[2]	
	Remaining life expectancy in years			Remaining life expectancy in years		
Canada	69.3	69.6	0.1	76.2	77.1	0.2
United States	67.0	69.0	0.3	74.6	76.7	0.4
Sweden	72.3	72.2	0.0	77.4	78.1	0.1
England and Wales	68.8	69.7	0.2	75.2	75.8	0.1
Netherlands	70.9	71.6	0.1	76.6	78.1	0.3
German Democratic Republic	68.9	68.9	-	74.2	74.5	0.1
German Federal Republic	67.3	68.1	0.2	73.6	74.7	0.2
France	69.1	69.5	0.1	76.7	77.6	0.2
Switzerland	70.3	71.7	0.2	76.2	78.3	0.4
Italy	68.5	69.9	0.4	74.6	76.1	0.4
Israel[3]	69.9	71.0	0.2	73.4	74.7	0.3
Japan	69.5	72.3	0.5	74.9	77.6	0.5
Australia	67.4	69.3	0.4	74.2	76.4	0.4

[1]Data for the United States refer to the average for the period 1969-71; data for Switzerland refer to the average for the period 1968-73.
[2]Data for Canada, France, and Italy refer to 1974; data for the German Federal Republic, Israel, and Australia refer to 1975.
[3]Jewish population only.

SOURCES: World Health Organization: World Health Statistics, 1970 and 1978. Vol. 1. Geneva. World Health Organization, 1973 and 1978; United Nations: Demographic Yearbook 1976. Pub. No. ST/ESA/STAT/SER.R/4. New York. United Nations, 1977; National Center for Health Statistics: U.S. Decennial Life Tables for 1969-1971, Vol. 1, No. 1. DHEW Pub. No. (HRA) 75-1150. Health Resources Administration. Washington. U.S. Government Printing Office, May 1975; Final mortality statistics, 1976. Monthly Vital Statistics Report, Vol. 26, No. 12, supplement 2. DHEW Pub. No. (PHS) 78-1120. Public Health Service. Washington. U.S. Government Printing Office, Mar. 30, 1978.

Table 14. Death rates due to diseases of the heart, according to race, sex, and age: United States, selected years 1950–77

(Data are based on the national vital registration system)

Race, sex, and age	Year							
	1950	1955	1960	1965	1970[1]	1975[1]	1976[1]	1977[1]
Total[2]	Number of deaths per 100,000 resident population							
All ages, age adjusted[3]	307.6	287.5	286.2	273.9	253.6	220.5	216.7	210.4
All ages, crude	356.8	356.5	369.0	368.0	362.0	336.2	337.2	332.3
Under 25 years	5.0	3.2	2.4	2.1	2.2	2.4	2.5	2.5
Under 1 year	4.1	7.4	6.6	9.8	13.1	20.3	23.1	23.1
1-24 years	5.0	3.0	2.1	1.7	1.8	1.8	1.8	1.8
25-29 years	14.8	11.7	9.9	8.6	7.0	5.6	5.6	5.7
30-34 years	27.5	22.4	20.9	19.5	16.6	12.4	12.1	11.8
35-39 years	57.3	49.1	47.7	46.0	40.8	32.6	30.1	30.0
40-44 years	122.5	107.7	103.5	98.8	90.7	76.0	72.8	70.5
45-49 years	228.7	200.8	197.6	188.4	174.4	147.3	145.7	137.8
50-54 years	397.5	362.0	355.8	340.4	308.3	261.9	252.5	248.6
55-59 years	642.2	584.1	571.6	535.7	514.3	437.0	423.2	405.3
60-64 years	1,007.9	915.2	934.2	905.6	811.9	710.3	701.7	678.7
65 years and over	2,844.5	2,772.7	2,823.0	2,778.7	2,683.3	2,403.9	2,393.5	2,334.0
65-69 years	1,494.6	1,427.9	1,412.6	1,348.1	1,263.8	1,049.5	1,021.6	992.3
70-74 years	2,348.1	2,168.5	2,173.5	1,999.9	1,936.4	1,708.2	1,658.6	1,605.8
75-79 years	3,683.4	3,462.1	3,358.8	3,242.5	3,052.2	2,716.1	2,707.6	2,654.7
80-84 years	5,476.1	5,421.5	5,501.5	5,103.6	4,744.1	4,133.8	4,090.6	3,998.6
85 years and over	9,151.0	8,917.2	9,317.8	9,538.4	7,891.3	7,282.0	7,384.3	7,095.8
White male								
All ages, age adjusted[3]	381.1	367.4	375.4	369.2	347.6	308.0	303.0	294.0
All ages, crude	434.2	438.5	454.6	450.8	438.3	401.1	399.4	392.4
Under 25 years	4.2	2.8	2.1	1.8	2.2	2.3	2.5	2.5
Under 1 year	4.6	6.7	6.9	8.9	12.0	19.3	22.4	24.0
1-24 years	4.2	2.6	1.9	1.5	1.8	1.8	1.8	1.7
25-29 years	14.4	12.3	9.5	8.2	6.8	6.1	6.0	6.2
30-34 years	29.0	26.6	24.9	22.6	18.8	14.4	14.9	14.7
35-39 years	68.4	66.7	66.0	62.2	54.8	43.4	41.3	41.1
40-44 years	160.4	152.4	151.7	144.8	131.3	111.6	109.2	102.6
45-49 years	313.3	291.6	300.4	287.1	266.0	228.5	223.2	210.3
50-54 years	544.6	523.9	540.4	520.3	474.2	405.9	390.1	382.2
55-59 years	878.6	836.8	842.0	812.8	784.3	668.9	642.7	614.1
60-64 years	1,324.3	1,262.6	1,311.6	1,314.8	1,209.9	1,067.4	1,049.0	1,004.0
65 years and over	3,302.2	3,251.2	3,363.2	3,401.3	3,316.2	2,986.0	2,963.2	2,894.8
65-69 years	1,939.7	1,889.6	1,928.7	1,903.1	1,828.8	1,567.9	1,537.2	1,487.0
70-74 years	2,852.9	2,724.2	2,788.8	2,679.5	2,641.4	2,367.3	2,317.7	2,260.5
75-79 years	4,248.7	4,090.3	4,099.6	4,082.8	3,939.0	3,600.1	3,603.3	3,542.3
80-84 years	6,186.6	6,258.3	6,340.5	6,137.4	5,828.7	5,283.2	5,219.4	5,142.5
85 years and over	9,959.6	9,316.0	10,135.8	10,657.3	8,818.0	8,550.3	8,692.9	8,472.2

See footnotes at end of table.

Table 14. Death rates due to diseases of the heart, according to race, sex, and age: United States, selected years 1950–77—Continued

(Data are based on the national vital registration system)

Race, sex, and age	Year							
	1950	1955	1960	1965	1970[1]	1975[1]	1976[1]	1977[1]
	Number of deaths per 100,000 resident population							
White female								
All ages, age adjusted[3]	223.6	204.0	197.1	183.9	167.8	144.2	141.7	137.2
All ages, crude	290.5	293.0	306.5	310.7	313.8	301.3	305.5	301.8
Under 25 years	4.2	2.4	1.7	1.5	1.4	1.7	1.6	1.7
Under 1 year	2.9	5.6	4.3	7.4	7.0	16.0	15.5	16.2
1-24 years	4.3	2.3	1.5	1.3	1.2	1.2	1.2	1.2
25-29 years	10.4	7.3	6.2	5.0	3.6	2.9	2.8	2.8
30-34 years	17.0	11.6	10.0	9.2	7.7	5.7	5.1	5.4
35-39 years	29.8	20.8	18.5	17.9	15.3	12.1	11.4	10.6
40-44 years	56.3	42.3	39.4	34.5	31.7	27.8	25.3	25.4
45-49 years	103.8	78.7	72.7	70.9	63.3	51.8	53.1	49.3
50-54 years	184.2	149.8	137.9	134.0	121.7	103.4	97.1	96.8
55-59 years	331.4	282.1	263.4	239.1	227.7	194.0	189.9	179.8
60-64 years	613.9	522.9	518.9	468.1	419.4	360.0	357.6	349.0
65 years and over	2,503.1	2,430.0	2,432.8	2,367.9	2,283.9	2,053.1	2,056.1	1,999.9
65-69 years	1,055.9	975.3	914.7	852.3	763.5	619.3	597.7	587.5
70-74 years	1,891.2	1,682.6	1,635.6	1,453.1	1,384.7	1,165.4	1,121.1	1,073.7
75-79 years	3,237.2	3,015.1	2,848.9	2,672.8	2,473.6	2,152.0	2,120.3	2,053.7
80-84 years	5,166.9	5,041.9	5,062.0	4,591.4	4,221.5	3,644.7	3,616.3	3,511.9
85 years and over	9,085.7	9,155.9	9,280.8	9,333.2	7,839.9	7,105.3	7,244.5	6,921.5
All other male								
All ages, age adjusted[3]	407.5	369.2	368.3	366.2	350.8	307.0	302.8	297.8
All ages, crude	342.0	319.4	320.5	318.4	310.2	277.1	276.5	273.3
Under 25 years	9.7	6.8	5.3	4.9	5.2	4.9	5.5	5.1
Under 1 year	5.9	12.6	13.1	20.4	32.2	35.4	44.6	39.3
1-24 years	9.9	6.5	4.9	4.1	4.1	3.8	4.0	3.7
25-29 years	31.2	28.8	26.2	27.4	26.5	19.1	18.0	18.9
30-34 years	71.9	51.1	53.7	55.1	49.9	41.7	37.6	35.2
35-39 years	129.0	106.7	112.5	118.7	112.3	96.3	88.5	83.8
40-44 years	261.8	232.3	211.3	233.6	230.2	178.2	163.6	171.4
45-49 years	428.9	414.1	365.6	374.5	376.1	301.6	298.3	290.9
50-54 years	813.9	676.2	631.0	627.2	585.0	507.9	510.8	494.6
55-59 years	1,196.4	999.4	912.1	876.2	891.0	758.8	767.5	752.9
60-64 years	1,663.9	1,522.6	1,540.7	1,499.1	1,267.5	1,126.5	1,168.7	1,177.6
65 years and over	2,637.9	2,562.6	2,752.1	2,715.7	2,680.1	2,431.5	2,382.0	2,331.4
65-69 years	1,856.9	1,811.7	1,983.3	1,864.3	1,816.9	1,446.6	1,416.7	1,350.3
70-74 years	2,518.1	2,467.6	2,562.5	2,429.8	2,540.9	2,437.6	2,341.6	2,262.9
75-79 years	3,578.1	3,066.3	3,098.6	3,277.0	3,359.3	3,152.2	3,171.5	3,261.0
80-84 years	3,845.9	4,064.3	4,489.1	3,973.0	3,948.9	3,589.5	3,478.9	3,466.7
85 years and over	6,152.6	5,720.8	6,128.6	6,929.4	4,983.6	4,917.2	4,826.5	4,661.1

See footnotes at end of table.

Table 14. Death rates due to diseases of the heart, according to race, sex, and age: United States, selected years 1950–77—Continued

(Data are based on the national vital registration system)

Race, sex, and age	Year							
	1950	1955	1960	1965	1970[1]	1975[1]	1976[1]	1977[1]
Black male:	Number of deaths per 100,000 resident population							
All ages, age adjusted[3]	415.5	---	381.2	384.1	375.9	328.9	326.0	322.4
All ages, crude	348.4	---	330.6	331.7	330.3	296.1	296.9	294.7
Under 25 years	9.8	---	5.3	5.1	5.4	5.2	5.7	5.4
Under 1 year	---	---	13.9	21.3	33.5	37.2	46.6	43.8
1-24 years	---	---	4.8	4.3	4.3	4.0	4.3	3.9
25-29 years	32.5	---	28.1	28.4	28.0	21.2	20.1	20.8
30-34 years	73.8	---	57.7	59.7	57.4	47.9	43.6	40.3
35-39 years	133.7	---	120.0	127.7	124.5	104.2	97.6	93.2
40-44 years	271.4	---	222.1	250.1	253.4	194.3	180.6	188.0
45-49 years	442.3	---	386.0	397.3	412.8	329.7	327.8	322.3
50-54 years	841.2	---	667.0	661.6	626.1	547.8	553.8	536.8
55-59 years	1,225.8	---	973.2	931.4	954.3	804.5	826.0	805.3
60-64 years	1,717.3	---	1,593.9	1,613.1	1,354.6	1,189.7	1,238.0	1,247.6
65 years and over	2,680.8	---	2,798.4	2,790.4	2,836.7	2,580.9	2,527.4	2,491.1
65-69 years	1,894.9	---	2,030.4	1,937.9	1,934.9	1,509.7	1,464.7	1,405.0
70-74 years	2,570.3	---	2,661.2	2,547.8	2,694.5	2,636.9	2,539.7	2,458.3
75-79 years		---	3,146.3	3,422.8	3,504.9	3,482.8	3,565.5	3,734.5
80-84 years	4,107.9	---	4,409.5	4,078.6	4,305.1	3,826.7	3,721.8	3,803.8
85 years and over		---	6,037.9	7,113.3	5,367.6	5,296.2	5,182.1	5,031.7
All other female								
All ages, age adjusted[3]	342.9	293.0	283.3	259.9	236.6	194.6	190.3	188.7
All ages, crude	283.0	256.8	255.5	248.6	241.0	214.7	215.9	216.4
Under 25 years	11.4	7.5	5.3	4.6	4.7	3.9	4.1	4.0
Under 1 year	6.4	16.3	11.7	17.4	31.4	31.3	42.6	35.0
1-24 years	11.7	6.9	4.9	3.9	3.5	2.9	2.7	2.9
25-29 years	37.3	26.7	23.1	19.8	14.2	7.6	9.7	9.6
30-34 years	66.1	51.1	43.8	36.7	31.6	17.5	17.6	14.4
35-39 years	129.1	91.2	83.2	73.5	59.6	45.2	32.7	40.4
40-44 years	245.5	177.2	158.2	147.8	118.8	80.0	76.1	76.2
45-49 years	397.6	319.1	257.9	227.0	203.2	146.3	145.5	137.7
50-54 years	667.9	542.7	455.1	390.1	342.0	247.5	247.6	249.6
55-59 years	998.8	789.2	712.6	592.7	535.5	436.3	410.1	401.7
60-64 years	1,421.7	1,143.2	1,170.6	1,100.9	828.7	686.7	662.9	658.2
65 years and over	2,158.2	2,075.8	2,197.2	2,090.8	2,094.4	1,864.5	1,866.4	1,851.0
65-69 years	1,366.7	1,394.6	1,393.3	1,251.3	1,226.8	892.9	833.7	805.9
70-74 years	2,160.0	1,879.6	2,006.4	1,765.9	1,836.4	1,867.0	1,782.3	1,724.2
75-79 years	3,059.7	2,712.3	2,507.5	2,503.7	2,492.6	2,382.9	2,597.9	2,705.5
80-84 years	2,955.0	3,045.1	3,730.2	3,570.1	3,353.5	2,638.9	2,698.5	2,700.0
85 years and over	5,350.0	4,811.8	5,564.1	5,912.2	4,784.7	4,181.8	4,160.3	4,050.0

See footnotes at end of table.

Table 14. Death rates due to diseases of the heart, according to race, sex, and age: United States, selected years 1950–77—Continued

(Data are based on the national vital registration system)

Race, sex, and age	Year							
	1950	1955	1960	1965	1970[1]	1975[1]	1976[1]	1977[1]
Black female:	Number of deaths per 100,000 resident population							
All ages, age adjusted[3]	349.5	---	292.6	271.1	251.7	209.4	205.1	204.2
All ages, crude	289.9	---	268.5	263.8	261.0	235.7	237.4	239.0
Under 25 years	11.4	---	5.4	4.8	4.8	4.2	4.2	4.3
Under 1 year	---	---	12.0	17.9	31.3	34.8	44.7	37.7
1–24 years	---	---	5.0	4.1	3.7	3.1	2.9	3.1
25–29 years	38.3	---	24.4	20.3	16.0	8.9	10.7	11.0
30–34 years	67.4	---	47.0	40.3	34.5	20.1	20.9	16.9
35–39 years	131.6	---	88.5	79.3	66.7	49.5	36.0	45.8
40–44 years	249.5	---	166.8	156.6	133.0	90.8	84.8	84.3
45–49 years	403.0	---	269.1	241.3	223.2	164.9	166.1	156.9
50–54 years	682.0	---	471.8	409.4	367.8	273.1	275.4	279.8
55–59 years	1,022.7	---	754.8	619.9	567.6	471.2	443.1	435.6
60–64 years	1,457.0	---	1,211.1	1,165.4	878.2	726.8	702.3	697.9
65 years and over	2,172.9	---	2,234.7	2,151.9	2,199.4	1,970.1	1,969.3	1,957.3
65–69 years	1,378.8	---	1,430.6	1,307.0	1,291.6	924.3	859.2	838.2
70–74 years	2,188.3	---	2,055.2	1,816.2	1,947.6	2,029.6	1,935.2	1,859.8
75–79 years	3,499.3	---	2,545.0	2,585.8	2,625.8	2,632.5	2,869.9	3,060.6
80–84 years		---	3,743.1	3,632.9	3,536.8	2,798.3	2,884.4	2,874.2
85 years and over		---	5,650.0	6,030.4	5,003.8	4,398.0	4,344.0	4,247.1

[1]Excludes deaths of nonresidents of the United States.
[2]Includes all races and both sexes.
[3]Age adjusted by the direct method to the total population of the United States as enumerated in 1940, using 11 age groups.

NOTE: The ICDA revisions and code numbers are Sixth Revision, Nos. 400–402, 410–443, for 1950 and 1955; Seventh Revision, Nos. 400–402, 410–443, for 1960 and 1965; and Eighth Revision, Nos. 390–398, 402, 404, 410–414, 420–429, for 1970–77.

SOURCES: National Center for Health Statistics: Vital Statistics of the United States, Vol. II, for data years 1950–1970 and 1975, Washington. U.S. Government Printing Office; for data years 1976–1977, Public Health Service, DHEW, Hyattsville, Md. To be published; Data computed by the Division of Analysis from data compiled by the Division of Vital Statistics; U.S. Bureau of the Census: Population estimates and projections. Current Population Reports. Series P-25, Nos. 310, 519, 643, and 721. Washington. U.S. Government Printing Office, June 1965, Apr. 1974, Jan. 1977, and Apr. 1978; 1950 Nonwhite Population by Race, Special report P-E No. 3B; General population characteristics, United States summary, 1960 and 1970, U.S. Census of Population. Final reports PC(1)-1B and PC(1)-B1, Washington. U.S. Government Printing Office, 1951, 1961, and 1972.

Table 15. Death rates due to ischemic heart disease, according to race, sex, and age: United States, selected years 1968–77

(Data are based on the national vital registration system)

Race, sex, and age	Year					
	1968	1969	1970[1]	1975[1]	1976[1]	1977[1]
Total[2]	Number of deaths per 100,000 resident population					
All ages, age adjusted[3]	241.6	234.7	228.1	196.1	191.6	185.0
All ages, crude	338.4	332.6	328.1	301.7	301.0	295.1
Under 25 years	0.3	0.3	0.3	0.2	0.2	0.2
25–29 years	2.8	2.9	3.1	2.0	2.1	2.0
30–34 years	10.4	10.1	10.0	7.4	7.4	6.9
35–39 years	32.4	32.1	30.4	23.8	22.0	21.8
40–44 years	79.3	76.6	73.7	62.3	59.8	56.8
45–49 years	158.3	153.2	148.6	126.3	123.2	117.0
50–54 years	283.8	275.7	269.6	228.6	218.6	214.0
55–59 years	479.2	463.2	457.9	385.5	370.4	354.4
60–64 years	781.5	744.4	733.1	633.8	622.1	598.5
65 years and over	2,573.1	2,527.1	2,470.4	2,186.7	2,166.2	2,101.2
65–69 years	1,213.6	1,178.0	1,151.9	944.5	912.8	882.1
70–74 years	1,862.8	1,813.2	1,785.3	1,547.5	1,495.1	1,438.8
75–79 years	2,932.7	2,835.6	2,824.2	2,481.6	2,458.1	2,394.8
80–84 years	4,581.0	4,519.8	4,383.5	3,777.4	3,716.2	3,617.9
85 years and over	8,483.0	8,284.5	7,249.4	6,640.0	6,715.0	6,420.1
White male						
All ages, age adjusted[3]	336.6	329.1	320.3	280.6	274.2	264.7
All ages, crude	419.3	411.9	404.9	366.3	362.5	354.2
Under 25 years	0.3	0.3	0.3	0.3	0.2	0.2
25–29 years	3.4	3.3	3.8	2.8	2.8	2.4
30–34 years	13.7	13.3	13.3	10.6	10.6	10.1
35–39 years	48.7	48.5	46.0	35.8	34.0	33.1
40–44 years	123.4	120.0	115.6	99.1	96.6	89.2
45–49 years	255.0	248.7	240.2	205.4	199.3	188.3
50–54 years	454.1	442.5	433.0	368.8	350.7	343.3
55–59 years	746.5	731.9	722.2	608.5	582.2	554.0
60–64 years	1,187.1	1,144.2	1,120.7	977.6	952.0	907.6
65 years and over	3,204.0	3,153.9	3,090.3	2,747.3	2,712.0	2,633.4
65–69 years	1,760.1	1,723.8	1,698.5	1,441.3	1,402.6	1,349.9
70–74 years	2,582.9	2,524.2	2,468.7	2,179.7	2,121.6	2,056.7
75–79 years	3,792.5	3,686.6	3,686.6	3,323.3	3,307.0	3,232.2
80–84 years	5,597.4	5,560.1	5,436.4	4,859.0	4,778.4	4,686.6
85 years and over	9,598.7	9,443.1	8,164.2	7,841.9	7,954.4	7,683.4

See footnotes at end of table.

Table 15. Death rates due to ischemic heart disease, according to race, sex, and age: United States, selected years 1968–77—Continued

(Data are based on the national vital registration system)

Race, sex, and age	Year					
	1968	1969	1970[1]	1975[1]	1976[1]	1977[1]
White female	Number of deaths per 100,000 resident population					
All ages, age adjusted[3]	157.6	152.4	148.5	126.3	123.6	119.0
All ages, crude	286.6	283.7	282.5	269.2	272.0	267.5
Under 25 years	0.2	0.2	0.1	0.1	0.1	0.1
25-29 years	1.1	1.0	1.2	0.6	0.8	0.7
30-34 years	3.4	3.0	3.5	2.3	2.1	2.1
35-39 years	8.7	9.2	8.4	7.1	6.3	5.8
40-44 years	23.3	22.4	21.1	18.8	17.5	17.0
45-49 years	48.6	46.0	45.8	38.9	39.5	36.3
50-54 years	99.3	95.8	96.1	81.7	76.5	75.5
55-59 years	200.1	188.5	189.6	161.6	155.8	147.6
60-64 years	381.3	358.2	364.1	308.9	306.9	296.7
65 years and over	2,174.5	2,139.7	2,093.4	1,863.6	1,858.0	1,799.2
65-69 years	731.0	700.3	685.3	546.5	522.5	510.8
70-74 years	1,315.4	1,280.1	1,269.0	1,046.5	1,004.2	954.9
75-79 years	2,372.5	2,289.1	2,276.3	1,963.3	1,922.0	1,850.8
80-84 years	4,095.3	4,025.6	3,889.7	3,331.1	3,284.9	3,179.7
85 years and over	8,311.6	8,118.8	7,192.3	6,484.7	6,596.1	6,281.9
All other male						
All ages, age adjusted[3]	316.6	306.7	294.4	254.0	249.4	245.3
All ages, crude	278.8	269.5	261.1	229.9	228.3	225.7
Under 25 years	0.9	0.7	0.7	0.5	0.3	0.4
25-29 years	10.6	11.5	10.9	6.5	6.1	7.6
30-34 years	31.9	36.6	28.5	20.9	20.9	18.8
35-39 years	87.6	81.9	75.0	61.1	59.7	57.7
40-44 years	182.9	180.4	174.0	135.2	122.8	128.1
45-49 years	328.9	318.9	304.5	245.4	234.8	232.2
50-54 years	521.9	521.7	483.5	421.5	422.9	404.8
55-59 years	820.6	766.7	750.1	633.8	637.4	626.5
60-64 years	1,222.9	1,128.2	1,084.7	950.4	985.6	989.5
65 years and over	2,469.4	2,421.0	2,349.4	2,086.9	2,034.8	1,990.7
65-69 years	1,655.5	1,630.6	1,568.2	1,223.3	1,200.8	1,145.7
70-74 years	2,318.5	2,213.8	2,234.3	2,096.3	1,985.5	1,930.2
75-79 years	2,979.0	3,010.0	2,966.7	2,712.3	2,723.6	2,795.7
80-84 years	3,535.8	3,661.8	3,471.9	3,117.4	2,984.4	2,939.8
85 years and over	5,958.5	5,259.1	4,418.8	4,245.3	4,176.5	4,030.6

See footnotes at end of table.

Table 15. Death rates due to ischemic heart disease, according to race, sex, and age: United States, selected years 1968–77—Continued

(Data are based on the national vital registration system)

Race, sex, and age	Year					
	1968	1969	1970[1]	1975[1]	1976[1]	1977[1]
Black male:	Number of deaths per 100,000 resident population					
All ages, age adjusted[3]	332.9	323.6	314.5	271.2	267.5	264.5
All ages, crude	290.8	282.0	277.2	244.9	244.2	242.5
Under 25 years	0.8	0.7	0.7	0.6	0.4	0.4
25-29 years	11.8	12.9	11.7	7.4	7.0	8.7
30-34 years	35.4	39.9	32.7	23.9	23.6	21.5
35-39 years	94.0	89.1	83.3	65.3	65.5	63.2
40-44 years	196.5	192.6	191.3	147.8	135.5	140.4
45-49 years	348.8	341.2	333.0	267.6	257.7	255.9
50-54 years	548.8	552.6	516.0	453.7	456.5	438.5
55-59 years	864.7	813.9	803.3	669.2	684.8	667.4
60-64 years	1,302.5	1,198.2	1,157.8	1,000.8	1,041.3	1,044.5
65 years and over	2,560.5	2,518.4	2,479.5	2,207.8	2,150.3	2,119.1
65-69 years	1,737.4	1,711.4	1,664.3	1,275.4	1,235.8	1,188.0
70-74 years	2,397.3	2,301.6	2,364.8	2,253.5	2,142.9	2,088.4
75-79 years	3,039.8	3,106.4	3,085.7	2,986.2	3,047.9	3,189.4
80-84 years	3,777.2	3,913.8	3,778.5	3,318.7	3,193.6	3,205.1
85 years and over	6,302.9	5,602.7	4,743.7	4,558.5	4,464.3	4,348.3
All other female						
All ages, age adjusted[3]	213.0	201.4	194.8	159.1	153.8	152.3
All ages, crude	213.4	204.2	200.4	177.7	176.9	177.0
Under 25 years	0.4	0.5	0.4	0.2	0.2	0.3
25-29 years	3.8	6.0	4.3	2.2	2.2	2.0
30-34 years	17.9	14.0	15.7	8.6	8.3	6.5
35-39 years	40.5	39.2	38.3	26.5	17.6	23.8
40-44 years	97.5	86.1	79.8	52.9	49.8	50.8
45-49 years	166.3	154.3	149.1	111.6	104.5	102.0
50-54 years	287.7	270.0	265.3	192.7	194.7	190.0
55-59 years	474.9	447.0	433.3	349.2	320.1	325.7
60-64 years	809.3	745.3	703.6	570.1	541.7	541.2
65 years and over	1,943.5	1,869.7	1,830.0	1,606.6	1,595.6	1,570.2
65-69 years	1,198.1	1,142.4	1,055.3	749.8	698.4	669.0
70-74 years	1,602.4	1,559.7	1,390.2	1,592.7	1,509.4	1,445.2
75-79 years	2,326.3	2,157.7	2,205.6	2,070.2	2,237.4	2,286.3
80-84 years	3,100.0	2,975.8	2,949.1	2,302.3	2,332.8	2,332.9
85 years and over	5,096.7	4,930.7	4,227.9	3,662.7	3,590.9	3,496.2

See footnotes at end of table.

Table 15. Death rates due to ischemic heart disease, according to race, sex, and age: United States, selected years 1968-77—Continued

(Data are based on the national vital registration system)

Race, sex, and age	Year					
	1968	1969	1970[1]	1975[1]	1976[1]	1977[1]
Black female:	Number of deaths per 100,000 resident population					
All ages, age adjusted[3]	223.2	212.3	207.1	171.1	165.5	164.8
All ages, crude	227.4	218.8	217.0	195.2	194.5	195.6
Under 25 years	0.5	0.5	0.5	0.2	0.3	0.3
25-29 years	4.1	6.5	4.9	2.5	2.6	2.5
30-34 years	19.8	15.9	17.3	9.9	9.8	7.9
35-39 years	44.0	42.5	43.5	29.6	19.8	27.3
40-44 years	107.2	94.8	89.1	60.7	55.9	57.1
45-49 years	179.4	167.1	163.6	126.6	118.8	117.5
50-54 years	303.7	288.7	285.5	212.6	216.8	214.4
55-59 years	500.0	472.5	459.2	377.1	345.1	354.6
60-64 years	849.5	785.8	747.7	605.0	573.4	575.5
65 years and over	2,012.4	1,947.8	1,920.2	1,696.1	1,682.8	1,658.4
65-69 years	1,250.4	1,200.3	1,111.8	777.3	721.3	695.2
70-74 years	1,678.1	1,627.4	1,683.5	1,731.3	1,638.1	1,556.2
75-79 years	2,411.3	2,258.3	2,320.0	2,282.2	2,491.9	2,581.9
80-84 years	3,158.0	3,120.5	3,110.5	2,439.8	2,490.2	2,483.9
85 years and over	5,269.6	5,070.0	4,418.2	3,843.4	3,747.7	3,663.9

[1] Excludes deaths of nonresidents of the United States.
[2] Includes all races and both sexes.
[3] Age adjusted by the direct method to the total population of the United States as enumerated in 1940, using 11 age groups.

NOTE: The ICDA revision and code numbers are the Eighth Revision, Nos. 410-413.

SOURCES: National Center for Health Statistics: Vital Statistics of the United States, Vol. II, for data years 1968-1970 and 1975, Washington. U.S. Government Printing Office; for data years 1976-1977, Public Health Service, DHEW, Hyattsville, Md. To be published; Data computed by the Division of Analysis from data compiled by the Division of Vital Statistics; U.S. Bureau of the Census: Population estimates and projections. Current Population Reports. Series P-25, Nos. 519, 643, and 721. Washington. U.S. Government Printing Office, Apr. 1974, Jan. 1977, and Apr. 1978.

Table 16. Age-adjusted death rates and average annual percent change, according to leading causes of death in 1950: United States, selected years 1950–77

(Data are based on the national vital registration system)

Year	Cause of death					
	All causes	Diseases of the heart	Malignant neoplasms	Cerebro-vascular diseases	All accidents	Tuber-culosis
	Deaths per 100,000 resident population					
1950	841.5	307.6	125.4	88.8	57.5	21.7
1955	764.6	287.5	125.8	83.0	54.4	8.4
1960	760.9	286.2	125.8	79.7	49.9	5.4
1965	739.0	273.9	127.0	72.7	53.3	3.6
1970[1]	714.3	253.6	129.9	66.3	53.7	2.2
1975[1]	638.3	220.5	130.9	54.5	44.8	1.2
1976[1]	627.5	216.7	132.3	51.4	43.2	1.1
1977[1]	612.3	210.4	133.0	48.2	43.8	1.0
	Average annual percent change					
1950-77	-1.2	-1.4	0.2	-2.2	-1.0	-10.8
1950-55	-1.9	-1.3	0.1	-1.3	-1.1	-17.3
1955-60	-0.1	-0.1	0.0	-0.8	-1.7	-8.5
1960-65	-0.6	-0.9	0.2	-1.8	1.3	-7.8
1965-70	-0.7	-1.5	0.5	-1.8	0.1	-9.4
1970-77	-2.2	-2.6	0.3	-4.3	-2.9	-10.7
1975-77	-2.1	-2.3	0.8	-6.0	-0.5	-0.9

[1]Excludes deaths of nonresidents of the United States.

NOTE: Age-adjusted rates computed by the direct method to the total population of the United States as enumerated in 1940, using 11 age groups.

SOURCE: Division of Vital Statistics, National Center for Health Statistics: Selected data.

Table 17. Death rates due to malignant neoplasms, according to race, sex, and age: United States, selected years 1950–77

(Data are based on the national vital registration system)

Race, sex, and age	Year							
	1950	1955	1960	1965	1970[1]	1975[1]	1976[1]	1977[1]
	Number of deaths per 100,000 resident population							
Total[2]								
All ages, age adjusted[3]	125.4	125.8	125.8	127.0	129.9	130.9	132.3	133.0
All ages, crude	139.8	146.5	149.2	153.8	162.8	171.7	175.8	178.7
Under 25 years	8.5	8.6	8.1	7.5	7.0	5.7	5.7	5.6
Under 1 year	8.7	7.7	7.2	7.1	4.7	4.2	3.2	3.8
1-24 years	8.5	8.6	8.2	7.6	7.1	5.8	5.7	5.6
25-29 years	15.1	14.6	14.7	13.8	12.7	11.4	11.2	11.2
30-34 years	25.3	23.7	23.8	24.0	21.0	19.2	18.7	18.4
35-39 years	45.8	44.5	43.0	42.4	40.9	35.5	35.2	34.5
40-44 years	81.2	79.2	77.6	78.4	76.8	71.2	68.9	68.9
45-49 years	137.0	135.7	135.4	136.1	139.3	136.6	134.4	133.5
50-54 years	216.9	219.7	224.2	227.4	229.6	226.2	228.4	229.9
55-59 years	329.6	327.4	327.8	330.5	357.5	352.7	356.2	356.5
60-64 years	468.5	466.2	478.3	496.1	498.8	519.7	533.5	539.6
65 years and over	851.3	869.5	870.9	887.0	923.4	961.1	979.0	988.4
65-69 years	598.8	638.0	634.6	647.9	674.0	670.3	685.3	691.9
70-74 years	830.0	812.7	818.6	829.9	857.1	923.1	927.8	931.2
75-79 years	1,077.6	1,067.1	1,032.9	1,047.0	1,099.5	1,152.9	1,185.0	1,201.4
80-84 years	1,294.2	1,294.9	1,310.1	1,239.2	1,286.1	1,326.0	1,343.1	1,364.9
85 years and over	1,450.8	1,465.3	1,450.0	1,483.6	1,320.7	1,408.8	1,441.5	1,445.6
White male								
All ages, age adjusted[3]	130.9	137.4	141.6	147.8	154.3	157.2	159.1	160.0
All ages, crude	147.2	160.0	166.1	173.7	185.1	194.8	199.2	202.5
Under 25 years	9.7	10.4	9.7	8.8	8.5	6.8	6.8	6.9
Under 1 year	9.6	8.7	7.9	6.2	4.3	4.5	3.1	4.5
1-24 years	9.7	10.4	9.8	8.9	8.6	6.8	6.9	7.0
25-29 years	15.0	15.0	16.4	15.0	13.7	12.5	12.1	12.9
30-34 years	20.6	19.8	21.1	21.1	19.1	18.2	16.4	16.2
35-39 years	32.7	33.0	33.8	35.5	33.6	29.4	29.8	29.8
40-44 years	57.2	56.2	59.7	63.4	65.3	59.6	58.7	57.9
45-49 years	110.4	113.5	114.5	119.5	122.9	124.3	124.7	120.1
50-54 years	194.7	209.5	219.9	222.9	225.4	224.9	225.1	228.6
55-59 years	327.9	340.5	360.1	368.3	397.4	378.2	382.7	380.4
60-64 years	506.0	529.6	559.3	598.1	617.0	619.7	630.5	637.5
65 years and over	986.0	1,045.6	1,073.4	1,144.9	1,221.2	1,296.0	1,318.3	1,330.1
65-69 years	685.5	767.1	780.0	832.0	879.3	887.3	900.3	898.7
70-74 years	965.2	986.4	1,029.9	1,078.3	1,153.8	1,248.8	1,247.4	1,264.1
75-79 years	1,261.4	1,297.0	1,297.9	1,376.3	1,493.3	1,616.8	1,672.8	1,686.6
80-84 years	1,573.4	1,633.0	1,648.4	1,647.5	1,770.2	1,923.3	1,964.8	1,994.1
85 years and over	1,733.9	1,746.9	1,791.4	1,958.7	1,772.2	2,046.6	2,110.9	2,163.1

See footnotes at end of table.

Table 17. Death rates due to malignant neoplasms, according to race, sex, and age: United States, selected years 1950–77—Continued

(Data are based on the national vital registration system)

Race, sex, and age	Year							
	1950	1955	1960	1965	1970[1]	1975[1]	1976[1]	1977[1]
White female	Number of deaths per 100,000 resident population							
All ages, age adjusted[3]	119.4	114.3	109.5	107.4	107.6	106.9	108.2	108.3
All ages, crude	139.9	141.0	139.8	141.9	149.4	157.7	162.0	164.5
Under 25 years	7.8	7.4	7.0	6.7	6.0	4.9	4.7	4.4
Under 1 year	7.8	7.2	6.8	6.2	5.4	4.2	3.6	3.3
1-24 years	7.8	7.4	7.0	6.7	6.0	4.9	4.8	4.4
25-29 years	14.8	13.8	12.7	12.4	11.6	10.2	10.3	9.5
30-34 years	27.3	25.7	24.2	25.1	21.8	19.5	20.3	19.7
35-39 years	53.9	51.7	47.9	44.3	44.5	37.7	38.6	35.5
40-44 years	97.4	93.3	86.7	83.0	78.8	75.0	71.0	71.0
45-49 years	153.1	144.8	143.8	140.4	142.6	134.3	131.3	131.9
50-54 years	221.1	213.8	211.6	216.5	214.8	208.1	209.5	208.4
55-59 years	314.5	297.8	281.7	279.0	301.9	302.9	306.3	306.0
60-64 years	419.4	394.5	382.6	380.8	380.0	406.6	420.7	427.1
65 years and over	768.4	747.6	718.4	702.0	714.3	729.2	744.9	752.1
65-69 years	534.2	526.7	500.3	488.3	495.6	486.1	506.7	518.8
70-74 years	733.1	679.5	641.6	623.6	626.4	655.4	661.2	654.6
75-79 years	956.1	912.7	847.8	820.5	836.2	842.2	856.6	863.4
80-84 years	1,153.1	1,114.8	1,107.2	1,005.8	1,011.9	1,019.6	1,023.7	1,050.2
85 years and over	1,348.1	1,357.6	1,304.9	1,257.5	1,126.6	1,165.9	1,192.8	1,181.8
All other male								
All ages, age adjusted[3]	125.8	138.7	154.8	167.3	185.3	199.7	202.3	205.4
All ages, crude	106.1	119.1	134.1	144.3	161.0	175.3	179.2	183.2
Under 25 years	7.2	7.3	6.9	6.4	6.7	5.5	5.8	5.4
Under 1 year	10.4	6.9	6.5	6.1	4.7	3.8	4.7	4.0
1-24 years	7.0	7.3	6.9	6.4	6.8	5.6	5.8	5.5
25-29 years	14.8	12.0	14.7	13.1	11.4	11.6	10.6	10.3
30-34 years	21.5	21.8	21.7	19.5	23.6	18.5	17.6	19.3
35-39 years	39.7	38.3	47.3	48.8	44.1	45.6	37.1	42.8
40-44 years	74.4	84.9	99.3	103.6	108.1	100.5	99.7	103.3
45-49 years	144.6	170.3	169.9	184.6	213.9	208.8	204.4	211.8
50-54 years	282.3	277.6	308.8	327.2	373.7	382.1	385.0	388.3
55-59 years	421.1	447.6	433.7	485.9	553.3	612.7	618.8	628.6
60-64 years	571.6	643.2	710.6	754.8	750.3	863.0	909.7	890.5
65 years and over	691.6	810.4	982.4	1,073.8	1,221.1	1,351.5	1,377.7	1,414.0
65-69 years	579.2	722.0	864.1	901.4	988.8	1,035.1	1,017.5	1,025.5
70-74 years	720.7	818.7	1,021.2	1,119.3	1,266.3	1,503.2	1,568.8	1,572.8
75-79 years	896.9	891.6	1,038.0	1,217.7	1,504.5	1,700.7	1,813.9	1,951.1
80-84 years	751.4	957.1	1,195.5	1,252.4	1,593.8	1,654.7	1,671.1	1,706.5
85 years and over	900.0	1,045.8	1,211.7	1,458.8	1,268.4	1,479.7	1,473.5	1,609.7

See footnotes at end of table.

Table 17. Death rates due to malignant neoplasms, according to race, sex, and age: United States, selected years 1950–77—Continued

(Data are based on the national vital registration system)

Race, sex, and age	Year							
	1950	1955	1960	1965	1970[1]	1975[1]	1976[1]	1977[1]
Black male:	Number of deaths per 100,000 resident population							
All ages, age adjusted[3]	126.1	---	158.5	174.1	198.0	214.4	217.7	221.9
All ages, crude	106.6	---	136.7	149.2	171.6	188.5	193.5	198.2
Under 25 years	7.1	---	6.7	6.4	6.8	5.7	6.0	5.5
Under 1 year	---	---	6.8	6.0	5.3	3.1	4.5	3.0
1-24 years	---	---	6.7	6.4	6.9	5.8	6.0	5.6
25-29 years	15.3	---	15.0	13.9	12.8	12.5	11.4	11.1
30-34 years	21.1	---	21.7	20.3	25.9	19.9	18.4	20.6
35-39 years	39.3	---	47.7	51.1	46.6	48.1	40.0	44.9
40-44 years	74.3	---	101.2	107.5	115.7	110.3	108.8	113.6
45-49 years	147.5	---	177.9	195.3	229.2	229.3	223.2	233.5
50-54 years	288.5	---	324.4	344.6	404.1	416.1	418.2	424.1
55-59 years	425.2	---	461.4	511.9	595.7	657.8	666.6	676.7
60-64 years	580.1	---	740.1	802.8	802.3	915.8	970.4	951.3
65 years and over	696.1	---	980.4	1,097.4	1,297.6	1,441.6	1,475.0	1,515.5
65-69 years	581.2	---	886.5	939.5	1,049.4	1,086.9	1,062.7	1,062.3
70-74 years	733.3	---	1,017.1	1,136.5	1,349.1	1,621.9	1,714.3	1,707.0
75-79 years	853.5	---	1,012.6	1,247.5	1,580.6	1,875.0	2,026.1	2,254.0
80-84 years		---	1,145.2	1,246.4	1,707.7	1,784.0	1,783.3	1,893.6
85 years and over		---	1,155.2	1,456.7	1,387.0	1,573.6	1,614.3	1,701.7
All other female								
All ages, age adjusted[3]	131.0	124.7	125.0	120.9	117.6	118.9	119.3	122.4
All ages, crude	110.1	108.4	109.8	109.2	110.0	115.5	117.8	121.2
Under 25 years	6.4	5.5	5.9	5.3	4.9	4.6	4.2	4.7
Under 1 year	6.9	5.3	6.5	3.8	3.3	2.7	0.8	2.6
1-24 years	6.4	5.5	5.9	5.4	5.0	4.6	4.3	4.7
25-29 years	19.6	19.9	17.1	15.3	14.4	11.1	11.3	11.8
30-34 years	49.1	38.8	41.5	40.4	25.5	23.9	23.9	23.6
35-39 years	89.1	82.9	72.1	71.4	60.2	51.4	45.3	51.2
40-44 years	155.9	144.8	128.4	119.1	115.2	95.1	94.3	95.0
45-49 years	223.5	226.4	207.1	194.4	173.9	177.9	164.1	167.9
50-54 years	335.7	312.0	300.7	271.2	267.0	251.0	270.9	272.8
55-59 years	446.2	390.7	369.6	343.6	357.1	368.1	357.8	372.4
60-64 years	528.3	446.0	505.4	508.1	422.6	459.3	471.9	490.6
65 years and over	513.5	542.2	591.0	597.0	641.6	683.3	700.9	707.6
65-69 years	429.2	478.0	498.3	341.8	534.0	484.5	492.0	502.6
70-74 years	565.2	551.3	596.6	590.8	672.4	810.3	801.5	807.1
75-79 years	617.7	672.8	676.6	671.3	729.1	917.1	940.1	1,024.6
80-84 years	525.0	545.1	757.2	690.9	744.2	769.5	822.6	777.9
85 years and over	719.2	641.2	727.5	942.9	758.9	732.7	819.0	768.9

See footnotes at end of table.

Table 17. Death rates due to malignant neoplasms, according to race, sex, and age: United States, selected years 1950–77—Continued

(Data are based on the national vital registration system)

Race, sex, and age	Year							
	1950	1955	1960	1965	1970[1]	1975[1]	1976[1]	1977[1]
Black female:	Number of deaths per 100,000 resident population							
All ages, age adjusted[3]	131.9	—	127.8	124.3	123.5	124.7	125.9	129.8
All ages, crude	111.8	—	113.8	113.6	117.3	123.3	126.8	131.0
Under 25 years	6.5	—	6.0	5.4	5.1	4.7	4.2	4.8
Under 1 year	—	—	6.7	3.0	3.3	2.7	0.5	2.2
1-24 years	—	—	5.9	5.5	5.2	4.8	4.3	4.9
25-29 years	19.7	—	18.4	16.6	15.4	11.2	12.3	13.6
30-34 years	50.6	—	43.1	43.9	27.0	25.4	25.8	25.6
35-39 years	89.2	—	75.9	73.9	64.6	54.8	48.4	54.6
40-44 years	156.6	—	132.4	124.6	124.7	101.4	100.3	102.6
45-49 years	227.3	—	210.7	201.8	183.2	191.3	177.3	181.8
50-54 years	339.5	—	308.4	278.4	280.3	270.6	290.6	297.0
55-59 years	449.9	—	384.8	355.0	370.7	385.5	377.7	393.5
60-64 years	530.1	—	518.5	527.4	444.7	472.7	491.1	510.0
65 years and over	513.0	—	591.4	601.2	668.4	704.4	730.3	737.2
65-69 years	428.4	—	505.0	515.5	558.3	489.0	497.8	512.0
70-74 years	569.5	—	596.5	593.5	702.3	860.1	855.5	853.8
75-79 years	605.3	—	673.4	670.1	762.5	989.8	1,028.6	1,147.1
80-84 years		—	745.1	672.6	764.7	789.0	871.3	807.3
85 years and over		—	728.9	934.8	791.5	733.0	844.0	784.9

[1] Excludes deaths of nonresidents of the United States.
[2] Includes all races and both sexes.
[3] Age adjusted by the direct method to the total population of the United States as enumerated in 1940, using 11 age groups.

NOTE: The ICDA revisions and code numbers are Sixth Revision, Nos. 140-205, for 1950 and 1955; Seventh Revision, Nos. 140-205, for 1960 and 1965; and Eighth Revision, Nos. 140-209, for 1970-77.

SOURCES: National Center for Health Statistics: Vital Statistics of the United States, Vol. II, for data years 1950-1970 and 1975, Washington. U.S. Government Printing Office; for data years 1976-1977, Public Health Service, DHEW, Hyattsville, Md. To be published; Data computed by the Division of Analysis from data compiled by the Division of Vital Statistics; U.S. Bureau of the Census: Population estimates and projections. Current Population Reports. Series P-25, Nos. 310, 519, 643, and 721. Washington. U.S. Government Printing Office, June 1965, Apr. 1974, Jan. 1977, and Apr. 1978; 1950 Nonwhite Population by Race, Special report P-E No. 3B; General population characteristics, United States summary, 1960 and 1970, U.S. Census of Population. Final reports PC(1)-1B and PC(1)-B1, Washington. U.S. Government Printing Office, 1951, 1961, and 1972.

Table 18. Death rates due to cancer of the respiratory system, according to race, sex, and age: United States, selected years 1950–77

(Data are based on the national vital registration system)

Race, sex, and age	Year							
	1950	1955	1960	1965	1970[1]	1975[1]	1976[1]	1977[1]
Total[2]	Number of deaths per 100,000 resident population							
All ages, age adjusted[3]	12.8	16.0	19.2	23.0	28.4	32.5	33.5	34.3
All ages, crude	14.1	18.2	22.2	26.9	34.2	40.7	42.5	44.0
Under 25 years	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
25-34 years	0.9	1.0	1.1	1.0	1.0	0.9	0.9	1.0
35-44 years	5.1	5.9	7.3	9.3	11.6	11.0	10.7	10.6
45-54 years	22.9	27.4	32.0	38.4	46.2	52.3	53.4	55.1
55-64 years	55.2	68.5	81.5	93.5	116.2	131.9	135.6	137.3
65 years and over	69.0	90.2	111.0	136.1	170.1	202.2	211.4	218.9
65-74 years	69.3	92.9	117.2	142.9	174.6	205.3	212.5	219.2
75-84 years	69.3	88.2	102.9	129.2	175.1	212.4	226.2	237.3
85 years and over	64.0	65.8	79.1	97.1	113.5	142.8	152.5	156.3
White male								
All ages, age adjusted[3]	21.6	28.5	34.6	41.5	49.9	54.6	55.6	56.4
All ages, crude	24.1	32.5	39.6	47.5	58.3	65.8	67.9	69.6
Under 25 years	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
25-34 years	1.2	1.4	1.6	1.4	1.4	1.3	1.0	1.2
35-44 years	7.9	8.9	10.4	12.9	15.4	13.4	13.4	12.4
45-54 years	39.1	47.2	53.0	60.7	67.6	73.0	72.7	74.0
55-64 years	95.9	125.3	149.8	169.7	199.3	206.3	209.3	208.5
65 years and over	116.1	164.4	211.7	270.8	341.7	398.0	411.3	423.3
65-74 years	119.5	172.1	225.1	282.5	344.8	385.2	391.8	399.8
75-84 years	109.1	155.2	191.9	259.2	360.7	452.0	477.5	501.1
85 years and over	102.8	105.1	133.9	181.5	221.8	298.2	329.6	340.1
White female								
All ages, age adjusted[3]	4.6	4.6	5.1	6.8	10.1	13.8	14.8	15.6
All ages, crude	5.4	5.7	6.4	8.6	13.1	18.8	20.5	21.7
Under 25 years	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1
25-34 years	0.5	0.6	0.6	0.6	0.6	0.5	0.7	0.6
35-44 years	2.2	2.6	3.4	4.5	6.0	7.1	6.7	7.1
45-54 years	6.5	6.8	9.8	14.8	22.1	27.7	29.1	30.8
55-64 years	15.5	14.8	16.7	23.4	39.3	58.9	63.0	65.3
65 years and over	31.6	31.2	30.6	36.7	50.0	69.6	77.3	81.5
65-74 years	27.2	26.7	26.5	33.1	45.4	68.1	76.3	80.9
75-84 years	40.0	39.1	36.5	41.1	56.8	71.3	79.4	83.6
85 years and over	43.9	42.7	45.2	51.2	57.4	73.1	76.4	78.8

See footnotes at end of table.

Table 18. Death rates due to cancer of the respiratory system, according to race, sex, and age: United States, selected years 1950–77—Continued

(Data are based on the national vital registration system)

Race, sex, and age	Year							
	1950	1955	1960	1965	1970[1]	1975[1]	1976[1]	1977[1]
	Number of deaths per 100,000 resident population							
All other male								
All ages, age adjusted[3]	17.0	24.0	35.6	42.6	56.3	66.8	68.2	71.4
All ages, crude	14.5	20.6	30.5	36.0	47.6	56.7	58.3	61.5
Under 25 years	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.2
25–34 years	2.1	2.2	2.5	1.7	2.4	1.6	1.5	2.1
35–44 years	9.3	12.9	19.8	24.5	29.3	27.3	23.8	24.6
45–54 years	40.5	56.3	70.4	84.7	113.1	122.9	129.0	131.2
55–64 years	79.1	108.0	154.2	171.0	231.5	290.0	295.4	305.0
65 years and over	60.7	93.7	170.2	219.6	285.3	358.4	369.1	397.3
65–74 years	67.6	100.6	183.4	240.2	301.2	378.2	384.3	408.4
75–84 years	48.5	83.2	145.4	177.8	278.7	346.9	372.2	412.0
85 years and over	10.5	45.8	114.8	147.1	158.8	218.8	223.5	252.8
Black male:								
All ages, age adjusted[3]	16.9	—	36.6	44.7	60.8	72.5	73.8	78.3
All ages, crude	14.3	—	31.1	37.6	51.2	61.8	63.3	67.8
Under 25 years	0.2	—	0.1	0.2	0.2	0.1	0.1	0.2
25–34 years	2.1	—	2.6	1.8	2.9	1.6	1.5	2.3
35–44 years	9.4	—	20.7	26.1	32.6	30.7	26.7	27.6
45–54 years	41.1	—	75.0	90.4	123.5	136.9	142.6	147.5
55–64 years	78.8	—	161.8	182.7	250.3	313.2	319.4	331.9
65 years and over	58.9	—	166.4	224.0	302.9	383.3	394.0	430.4
65–74 years	65.2	—	184.6	248.1	322.2	404.7	408.8	435.9
75–84 years	42.4	—	126.3	172.6	290.6	370.7	401.5	469.6
85 years and over		—	110.3	140.0	154.4	220.8	226.8	255.0
All other female								
All ages, age adjusted[3]	4.1	5.2	5.6	7.1	10.4	13.4	14.3	15.7
All ages, crude	3.4	4.5	4.9	6.3	9.5	12.5	13.4	14.7
Under 25 years	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1
25–34 years	1.1	0.7	0.7	0.9	0.5	0.7	0.8	0.9
35–44 years	2.6	3.3	3.5	6.1	9.4	8.4	8.3	10.5
45–54 years	8.7	10.9	12.5	16.7	23.3	30.7	34.4	36.4
55–64 years	15.5	19.6	20.2	25.8	35.3	52.3	54.7	63.3
65 years and over	18.3	25.0	27.2	29.3	49.0	62.6	66.0	66.9
65–74 years	17.8	25.2	22.5	29.5	47.7	62.9	65.8	70.1
75–84 years	19.6	25.0	35.8	27.7	53.2	64.4	70.1	65.6
85 years and over	19.2	23.5	44.7	34.7	45.8	55.5	56.2	50.8

See footnotes at end of table.

Table 18. Death rates due to cancer of the respiratory system, according to race, sex, and age: United States, selected years 1950–77—Continued

(Data are based on the national vital registration system)

Race, sex, and age	Year							
	1950	1955	1960	1965	1970[1]	1975[1]	1976[1]	1977[1]
Black female:	Number of deaths per 100,000 resident population							
All ages, age adjusted[3]	4.1	---	5.5	7.1	10.9	14.2	15.2	16.7
All ages, crude	3.4	---	4.9	6.3	10.1	13.4	14.5	15.8
Under 25 years	0.1	---	0.1	0.1	0.1	0.0	0.0	0.0
25-34 years	1.2	---	0.8	0.9	0.5	0.7	0.8	1.1
35-44 years	2.7	---	3.4	6.3	10.5	9.5	9.1	11.8
45-54 years	8.8	---	12.8	17.6	25.3	33.6	38.4	41.0
55-64 years	15.3	---	20.7	26.0	36.4	55.0	57.9	66.0
65 years and over	17.2	---	25.3	27.3	50.0	63.2	66.6	67.1
65-74 years	16.4	---	20.7	28.2	49.3	63.7	66.3	71.3
75-84 years	19.2	---	33.1	24.5	52.6	65.5	73.9	65.6
85 years and over		---	44.7	30.4	47.6	53.5	49.5	45.4

[1]Excludes deaths of nonresidents of the United States.
[2]Includes all races and both sexes.
[3]Age adjusted by the direct method to the total population of the United States as enumerated in 1940, using 11 age groups.

NOTE: The ICDA revisions and code numbers are Sixth Revision, Nos. 160-164, for 1950 and 1955; Seventh Revision, Nos. 160-164, for 1960 and 1965; and Eighth Revision, Nos. 160-163, for 1970-77.

SOURCES: National Center for Health Statistics: Vital Statistics of the United States, Vol. II, for data years 1950-1970 and 1975, Washington. U.S. Government Printing Office; for data years 1976-1977, Public Health Service, DHEW, Hyattsville, Md. To be published; Data computed by the Division of Analysis from data compiled by the Division of Vital Statistics; U.S. Bureau of the Census: Population estimates and projections. Current Population Reports. Series P-25, Nos. 310, 519, 643, and 721. Washington. U.S. Government Printing Office, June 1965. Apr. 1974, Jan. 1977, and Apr. 1978; 1950 Nonwhite Population by Race, Special report P-E No. 3B; General population characteristics, United States summary, 1960 and 1970, U.S. Census of Population. Final reports PC(1)-1B and PC(1)-B1, Washington. U.S. Government Printing Office, 1951, 1961, and 1972.

Table 19. Infants weighing 2,500 grams or less at birth, according to color or race, geographic division, and State: United States, average annual 1965–67, 1970–72, and 1975–77

(Data are based on the national vital registration system)

Geographic division and State	1965–67			1970–72			1975–77		
	Total	White	All other[1]	Total[2]	White	Black	Total[2]	White	Black
	Infants weighing 2,500 grams or less at birth per 100 total live births								
United States	8.3	7.2	13.7	7.8	6.6	13.6	7.2	6.1	13.3
New England	7.9	7.6	14.2	7.2	6.8	14.1	6.6	6.2	12.3
Maine	7.4	7.4	13.2	6.8	6.7	* 9.3	5.7	5.7	* 6.7
New Hampshire	7.6	7.5	* 9.3	6.8	6.7	*10.0	6.2	6.2	* 7.7
Vermont	7.8	7.8	* 2.7	7.1	7.0	*14.5	6.5	6.5	*12.5
Massachusetts	7.8	7.5	13.3	7.2	6.8	13.6	6.5	6.2	11.1
Rhode Island	8.3	7.9	14.7	7.3	6.7	17.2	6.8	6.4	13.2
Connecticut	8.4	7.7	15.1	7.6	6.8	14.3	7.0	6.2	13.7
Middle Atlantic	8.6	7.4	15.5	8.2	6.9	14.4	7.7	6.4	13.4
New York	9.0	7.7	15.2	8.4	7.2	14.2	8.0	6.6	13.2
New Jersey	8.4	7.1	15.0	8.1	6.7	14.6	7.6	6.2	13.6
Pennsylvania	8.1	7.0	16.6	7.7	6.7	14.8	7.2	6.2	13.9
East North Central	7.8	6.9	14.5	7.5	6.4	13.9	7.0	5.9	13.4
Ohio	7.9	7.1	15.0	7.5	6.6	13.8	7.0	6.1	13.2
Indiana	7.6	6.9	14.0	6.9	6.4	12.1	6.5	5.8	11.9
Illinois	8.2	6.8	14.4	8.0	6.4	14.2	7.6	5.9	13.8
Michigan	7.9	6.9	14.6	7.8	6.5	14.4	7.4	6.1	13.7
Wisconsin	6.9	6.5	13.5	6.4	6.1	12.5	5.8	5.3	12.6
West North Central	6.9	6.4	13.1	6.6	6.1	13.3	6.1	5.6	13.2
Minnesota	6.3	6.2	9.7	6.1	5.9	12.5	5.4	5.2	12.0
Iowa	6.2	6.1	13.3	6.1	5.9	12.9	5.6	5.5	10.8
Missouri	7.9	6.6	14.7	7.5	6.4	13.5	7.1	5.9	13.7
North Dakota	6.4	6.4	7.0	5.7	5.7	10.1	5.2	5.0	11.8
South Dakota	6.3	6.1	7.4	6.0	5.9	* 9.4	5.5	5.3	* 8.7
Nebraska	6.8	6.5	12.8	6.6	6.3	12.8	5.8	5.5	11.9
Kansas	7.0	6.6	12.9	6.8	6.3	12.7	6.5	5.9	13.4
South Atlantic	9.4	7.5	13.7	8.7	6.9	13.5	8.2	6.3	12.9
Delaware	9.0	7.3	15.7	8.3	6.4	15.5	7.9	6.2	13.8
Maryland	9.2	7.5	15.1	8.1	6.5	13.4	7.9	5.9	13.2
District of Columbia	13.0	7.4	14.5	12.6	7.1	13.5	12.6	6.6	13.8
Virginia	8.9	7.4	13.4	8.3	6.8	13.6	7.5	6.1	12.4
West Virginia	8.4	8.2	13.7	7.8	7.5	13.2	7.1	7.0	10.8
North Carolina	9.4	7.7	13.3	8.9	7.0	13.9	8.3	6.3	12.9
South Carolina	9.7	7.6	12.7	9.1	6.8	12.9	9.0	6.3	13.0
Georgia	9.6	7.3	13.7	9.1	7.0	13.5	8.7	6.4	12.9
Florida	9.2	7.5	13.7	8.4	6.8	13.1	7.9	6.3	12.7
East South Central	9.0	7.4	13.0	8.5	6.9	12.8	8.0	6.4	12.3
Kentucky	8.3	7.7	14.2	7.8	7.2	13.4	7.2	6.6	12.6
Tennessee	9.1	7.5	14.9	8.3	6.9	13.6	7.9	6.5	12.9
Alabama	9.0	7.1	12.4	8.7	6.7	12.7	8.2	6.2	11.9
Mississippi	9.7	6.8	12.3	9.3	6.6	12.4	9.1	6.3	12.3

See footnotes at end of table.

Table 19. Infants weighing 2,500 grams or less at birth, according to color or race, geographic division, and State: United States, average annual 1965–67, 1970–72, and 1975–77—Continued

(Data are based on the national vital registration system)

Geographic division and State	1965-67			1970-72			1975-77		
	Total	White	All other[1]	Total[2]	White	Black	Total[2]	White	Black
	Infants weighing 2,500 grams or less at birth per 100 total live births								
West South Central	8.7	7.3	13.8	8.2	6.8	13.6	7.8	6.5	13.2
Arkansas	8.8	7.4	12.1	7.9	6.6	12.0	8.0	6.4	12.7
Louisiana	10.1	7.1	14.6	9.3	6.7	13.6	8.9	6.3	12.8
Oklahoma	7.7	7.0	11.4	7.7	7.0	14.9	7.6	6.8	13.3
Texas	8.4	7.4	14.0	8.0	6.9	13.9	7.5	6.5	13.3
Mountain	8.8	8.5	11.1	7.9	7.7	14.3	7.1	6.9	13.3
Montana	8.0	8.0	8.5	7.5	7.5	14.9	6.7	6.5	*10.0
Idaho	7.2	7.2	10.0	6.5	6.5	* 5.7	5.7	5.7	* 6.9
Wyoming	9.2	9.0	12.9	9.1	8.9	18.8	8.7	8.5	16.4
Colorado	10.4	10.1	15.8	9.4	9.1	15.2	8.7	8.4	14.6
New Mexico	10.1	10.0	11.0	9.2	9.2	15.4	8.4	8.5	12.5
Arizona	7.8	7.4	9.9	7.0	6.8	11.9	6.4	6.2	11.7
Utah	7.1	7.0	10.6	6.4	6.3	10.8	5.4	5.4	15.1
Nevada	9.5	8.9	13.0	9.1	8.1	16.8	7.5	6.7	13.8
Pacific	7.4	6.7	11.3	6.6	6.0	12.3	6.1	5.4	11.5
Washington	6.8	6.5	10.9	6.4	6.1	12.6	5.6	5.3	9.8
Oregon	6.3	6.1	10.8	5.9	5.7	14.0	5.4	5.3	11.6
California	7.5	6.8	12.0	6.7	6.0	12.2	6.1	5.5	11.6
Alaska	7.1	6.3	8.7	6.3	6.0	10.3	5.4	5.0	9.1
Hawaii	9.0	7.5	9.6	8.1	6.4	11.6	7.6	6.0	9.3

[1] Data by birth weight for the black population not available for these years. In the Middle Atlantic, East North Central, South Atlantic, East South Central, and West South Central divisions, more than 95 percent of the births in the "all other" color category were black. However, in the Mountain and Pacific States most of the births in the "all other" color category were not black. Overall, 91 percent of the births in the "all other" color category were black for the 3-year period. Based on more recent data, infants other than black of the "all other" color category have a much lower low-birth-weight ratio than black infants. In fact, this other group's ratio is similar to the white ratio. Therefore, combining the black and other groups distorts the picture, making a trend difficult to interpret.

[2] Includes all other races not shown separately.

SOURCE: National Center for Health Statistics: Computed by the Division of Analysis from data compiled by the Division of Vital Statistics.

Table 20. Live births, according to month of pregnancy prenatal care began and race: United States, reporting areas, 1970–77

(Data are based on the national vital registration system)

Race and year	All live births	Month of pregnancy prenatal care began								No prenatal care
		1st or 2nd month	3rd month	4th month	5th month	6th month	7th month	8th month	9th month	
		Percent distribution								
Total[1]										
1970	100.0	41.2	26.7	12.1	7.3	4.8	3.4	2.0	0.8	1.7
1971	100.0	41.4	27.2	12.2	7.2	4.7	3.1	1.8	0.7	1.6
1972	100.0	42.4	27.0	12.0	7.1	4.5	3.0	1.7	0.7	1.6
1973	100.0	43.8	27.0	11.6	6.8	4.2	2.8	1.7	0.7	1.5
1974	100.0	44.9	27.2	11.4	6.4	3.9	2.6	1.6	0.6	1.4
1975	100.0	45.5	26.8	11.4	6.3	3.9	2.6	1.5	0.6	1.3
1976	100.0	46.7	26.7	11.0	6.1	3.7	2.4	1.4	0.6	1.4
1977	100.0	47.4	26.6	10.9	6.0	3.5	2.3	1.3	0.5	1.4
White										
1970	100.0	44.5	27.9	11.3	6.2	3.9	2.7	1.6	0.7	1.2
1971	100.0	44.7	28.3	11.3	6.1	3.8	2.6	1.5	0.6	1.1
1972	100.0	45.7	27.9	11.1	6.0	3.7	2.4	1.4	0.6	1.1
1973	100.0	47.1	27.8	10.6	5.7	3.4	2.3	1.4	0.6	1.1
1974	100.0	48.0	27.9	10.4	5.4	3.2	2.2	1.3	0.5	1.0
1975	100.0	48.5	27.4	10.5	5.4	3.2	2.2	1.3	0.5	1.0
1976	100.0	49.6	27.2	10.1	5.2	3.1	2.0	1.2	0.5	1.1
1977	100.0	50.2	27.1	10.0	5.1	2.9	1.9	1.1	0.5	1.1
Black										
1970	100.0	23.7	20.6	16.2	13.1	9.8	6.9	3.8	1.5	4.4
1971	100.0	24.8	21.8	16.5	13.0	9.2	6.1	3.3	1.2	4.0
1972	100.0	26.4	22.6	16.7	12.5	8.5	5.5	3.0	1.1	3.6
1973	100.0	28.2	23.2	16.3	11.9	7.9	5.0	2.8	1.2	3.4
1974	100.0	30.1	23.8	16.1	11.3	7.3	4.7	2.6	1.1	3.0
1975	100.0	31.6	24.2	16.0	10.8	6.9	4.4	2.4	1.0	2.7
1976	100.0	33.2	24.5	15.7	10.3	6.4	3.9	2.2	0.9	2.9
1977	100.0	34.4	24.6	15.3	10.0	6.1	3.8	2.2	0.8	2.8

[1] Includes all other races not shown separately.

NOTE: In 1970 and 1971, month of pregnancy prenatal care began was reported by 39 States and the District of Columbia; in 1972, by 40 States and the District of Columbia; in 1973-75, by 42 States and the District of Columbia; in 1976 and 1977, by 44 States and the District of Columbia. Figures for 1970 and 1971 are based on a 50-percent sample of births; for 1972-76, they are based on 100 percent of births in selected States and on a 50-percent sample of births in all other States. Percents are based only on records for which month of pregnancy prenatal care began is stated.

SOURCE: National Center for Health Statistics: Vital Statistics of the United States, Vol. I, for data years 1970-1975, Washington. U.S. Government Printing Office; for data years 1976-1977, Public Health Service, DHEW, Hyattsville, Md. To be published.

Table 21. Immunization and infection status of children 1–4 years of age: United States, 1970–78

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Year	Population 1-4 years in thousands	History of--								
		Measles		Rubella		DTP[1] vaccination		Polio vaccination		Mumps vaccination
		Infection	Vaccination	Infection	Vaccination	3 doses or more	0 doses	3 doses or more	0 doses	
		Percent of population								
1970	14,123	8.1	57.2	14.4	37.2	76.1	7.0	65.9	10.8	(2)
1971	14,112	8.7	61.0	13.9	51.2	78.7	5.8	67.3	8.6	(2)
1972	13,905	7.4	62.2	12.3	56.9	75.6	6.9	62.9	10.7	(2)
1973	13,874	6.3	61.2	12.8	55.6	72.6	6.2	60.4	13.9	34.7
1974	13,210	5.1	64.5	12.2	59.8	73.9	5.2	63.1	11.7	39.4
1975	12,729	4.8	65.5	11.3	61.9	75.2	4.5	64.8	10.3	44.4
1976[3]	12,276	4.3	65.9	10.0	61.7	71.4	3.7	61.6	9.5	48.3
1977	12,071	3.8	63.1	10.0	59.4	69.5	3.3	60.1	8.7	48.1
1978	12,187	3.3	62.8	7.8	61.7	68.0	3.8	61.4	7.9	51.1

[1] Diphtheria-tetanus-pertussis.
[2] Mumps vaccination was first reported in 1973.
[3] Beginning in 1976, the category "don't know" was added to response categories. Prior to 1976, the lack of the "don't know" option resulted in some forced positive answers which were particularly apparent for those vaccinations which require multiple dose schedules, i.e., polio and DTP.

NOTE: The proportions of the population ever infected or vaccinated are not mutually exclusive.

SOURCE: Center for Disease Control: United States Immunization Survey, 1978. DHEW Pub. No. (CDC) 79-8221. Public Health Service. Atlanta, Ga., July 1979.

Table 22. Selected notifiable disease rates, according to disease: United States, selected years 1950–77

(Data are based on reporting by State health departments)

Disease	Year							
	1950	1955	1960	1965	1970	1975	1976	1977
	Number of cases per 100,000 population							
Chickenpox	(1)	(1)	(1)	(1)	(1)	78.11	96.06	97.63
Diphtheria	3.83	1.21	0.51	0.08	0.21	0.14	0.06	0.04
Hepatitis A	(1)	19.45	23.15	17.49	27.87	16.82	15.51	14.40
Hepatitis B					4.08	6.30	7.14	7.78
Measles (rubeola)	211.01	337.88	245.42	135.33	23.23	11.44	19.16	26.51
Mumps	(1)	(1)	(1)	(1)	55.55	27.99	17.93	10.02
Pertussis (whooping cough)	79.82	38.21	8.23	3.51	2.08	0.82	0.47	1.02
Poliomyelitis, total	22.02	17.64	1.77	0.04	0.02	0.00	0.01	0.01
Paralytic		8.43	1.40	0.03	0.02	0.00	0.01	0.01
Rubella (German measles)	(1)	(1)	(1)	(1)	27.75	7.81	5.82	9.43
Salmonellosis, excluding typhoid fever	(1)	3.32	3.85	8.87	10.84	10.61	10.74	12.87
Shigellosis	15.45	8.47	6.94	5.70	6.79	7.78	6.15	7.42
Tuberculosis (newly reported active cases)	80.50	46.60	30.83	25.33	18.22	15.95	14.96	13.93
Venereal diseases (newly reported civilian cases):								
Syphilis[2]	146.02	76.15	68.78	58.81	45.46	38.00	33.69	30.10
Primary and secondary	16.73	4.02	9.06	12.16	10.94	12.09	11.14	9.50
Early latent	39.71	12.48	10.11	9.10	8.11	12.57	11.91	9.94
Late and late latent	76.22	53.83	45.91	35.09	25.05	12.81	10.29	10.39
Congenital	8.97	3.33	2.48	1.86	0.97	0.43	0.29	0.22
Gonorrhea	192.45	146.96	145.33	169.36	298.52	472.91	470.47	466.83
Chancroid	3.34	1.65	0.94	0.51	0.70	0.33	0.29	0.21
Granuloma inguinale	1.19	0.30	0.17	0.08	0.06	0.03	0.03	0.03
Lymphogranuloma venereum	0.95	0.47	0.47	0.46	0.30	0.17	0.17	0.16

[1] Not reported nationally.
[2] Includes stage of syphilis not stated.

NOTE: Rates greater than 0 but less than 0.005 are shown as 0.00. The total resident population was used to calculate all rates except venereal diseases, for which the civilian resident population was used.

SOURCES: Center for Disease Control: Reported morbidity and mortality in the United States, 1978, Morbidity and Mortality Weekly Report 27(54). Public Health Service, Atlanta, Ga., Sept. 1979; National Center for Health Statistics: Data computed by the Division of Analysis from data compiled by the Center for Disease Control; Venereal Disease Control Division, Center for Disease Control: Selected data.

Table 23. Self-assessment of health and limitation of activity, according to selected characteristics: United States, 1972 and 1977

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Characteristic	Self-assessment of health as fair or poor		With limitation of activity							
			Total		Limited but not in major activity		Limited in amount or kind of major activity		Unable to carry on major activity	
	1972	1977	1972	1977	1972	1977	1972	1977	1972	1977
	Percent of population									
Total[1,2,3]	11.6	11.9	12.6	13.0	3.1	3.0	6.6	6.5	2.9	3.4
Age										
Under 17 years	3.7	4.2	3.0	3.4	1.4	1.5	1.4	1.7	0.2	0.2
17-44 years	8.1	8.5	8.3	8.1	3.1	2.8	4.2	4.1	1.0	1.2
45-64 years	21.5	22.0	21.1	23.1	4.6	4.5	12.1	12.3	4.5	6.2
65 years and over	31.0	29.9	43.2	43.0	5.3	5.7	21.6	20.1	16.3	17.2
Sex[1]										
Male	11.0	11.4	13.8	14.1	3.2	3.0	5.6	5.2	4.9	5.8
Female	12.2	12.5	11.5	12.0	2.9	3.0	7.4	7.6	1.3	1.5
Race[1]										
White	10.7	10.9	12.3	12.8	3.1	3.1	6.5	6.4	2.7	3.2
Black	20.1	20.8	15.7	15.9	2.5	2.4	8.2	7.9	* 5.0	* 5.6
Family income[1,4]										
Less than $5,000	21.8	24.2	19.5	22.2	3.7	3.9	10.0	11.3	5.8	* 7.1
$5,000-$9,999	12.1	16.1	12.3	15.8	2.7	3.0	6.7	7.8	2.8	* 4.9
$10,000-$14,999	7.8	10.9	10.0	12.0	2.9	2.9	5.2	6.2	* 1.9	* 2.9
$15,000-$24,999	6.3	7.5	9.5	10.0	3.1	2.9	4.7	4.8	* 1.7	* 2.3
$25,000 or more	4.6	5.2	8.7	8.8	3.2	3.1	4.3	4.2	* 2.3	* 1.5
Geographic region[1]										
Northeast	10.1	10.8	11.4	12.0	2.8	2.8	6.0	6.1	* 2.5	* 3.2
North Central	10.0	10.5	12.0	12.3	3.1	2.9	6.5	6.5	2.5	* 2.9
South	15.0	15.0	13.5	14.0	2.8	2.8	7.0	7.0	3.6	* 4.1
West	10.3	10.0	13.6	13.5	3.7	3.8	6.8	6.3	* 3.0	* 3.5
Location of residence[1]										
Within SMSA	10.9	10.9	12.1	12.4	3.1	3.0	6.3	6.2	2.7	3.2
Outside SMSA	12.1	14.2	13.3	14.2	2.9	3.1	7.1	7.2	3.3	3.9

[1] Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.
[2] Includes all other races not shown separately.
[3] Includes unknown family income.
[4] Family income data have not been adjusted for inflation; therefore trend comparisons for the same income category may be misleading.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics: Data from the Health Interview Survey.

Table 24. Restricted-activity and bed-disability days, according to selected characteristics: United States, 1972 and 1977

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Characteristic	Restricted-activity days		Bed-disability days	
	1972	1977	1972	1977
	Number per person per year			
Total[1,2,3]	16.5	17.4	6.4	6.8
Age				
Under 17 years	10.6	11.2	4.6	5.2
17-44 years	13.4	14.2	5.3	5.4
45-64 years	22.7	24.4	7.9	8.2
65 years and over	36.5	36.5	14.1	14.5
Sex[1]				
Male	15.1	15.9	5.6	5.9
Female	17.9	18.8	7.2	7.6
Race[1]				
White	16.2	17.1	6.2	6.6
Black	21.2	21.6	8.8	8.9
Family income[1,4]				
Less than $5,000	24.3	29.6	9.6	11.9
$5,000-$9,999	16.2	20.3	6.3	7.9
$10,000-$14,999	14.3	15.8	5.7	6.1
$15,000-$24,999	13.0	14.0	5.2	5.3
$25,000 or more	11.2	12.6	4.3	4.9
Geographic area[1]				
Northeast	15.4	16.8	6.1	6.8
North Central	15.7	16.7	5.9	6.4
South	17.5	17.9	7.1	7.2
West	18.1	19.1	6.4	6.8
Location of residence[1]				
Within SMSA	16.5	17.7	6.6	6.9
Outside SMSA	16.7	17.0	6.3	6.5

[1] Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.
[2] Includes all other races not shown separately.
[3] Includes unknown family income.
[4] Family income data have not been adjusted for inflation; therefore trend comparisons for the same income category may be misleading.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics: Data from the Health Interview Survey.

Table 25. Disability days associated with acute conditions and incidence of acute conditions, according to age: United States, 1969–77

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Age	Year ending June 30								
	1969	1970	1971	1972	1973	1974	1975	1976	1977
Restricted-activity days	Number per person								
All ages[1]	9.2	8.5	8.6	9.3	9.2	9.3	9.7	9.4	9.4
Under 17 years	9.5	8.6	9.5	9.4	9.3	9.9	9.4	9.7	10.0
17-44 years	8.6	8.0	8.0	8.8	8.9	8.9	9.4	8.8	9.1
45-64 years	9.1	8.7	7.2	9.3	8.6	8.2	9.8	9.1	8.6
65 years and over	10.2	9.8	10.3	10.9	10.8	10.7	12.1	11.6	10.1
Bed-disability days[2]									
All ages[1]	4.2	3.8	3.8	4.1	4.0	4.0	4.2	4.2	4.2
Under 17 years	4.4	4.0	4.5	4.3	4.1	4.5	4.0	4.6	4.8
17-44 years	4.0	3.5	3.6	3.9	4.0	3.8	4.2	4.0	3.9
45-64 years	4.1	3.8	3.1	3.6	3.6	3.5	4.0	3.8	3.7
65 years and over	4.4	4.0	4.0	4.7	4.3	4.1	5.3	4.7	4.5
Incidence of acute conditions	Number per 100 persons								
All ages[1]	205.7	204.1	209.8	220.9	[3]199.6	[3]174.2	[3]199.1	218.4	222.6
Under 17 years	284.4	290.3	310.6	307.9	280.1	254.8	282.6	305.7	315.0
17-44 years	199.6	193.2	194.2	215.1	196.0	170.2	194.7	215.3	216.1
45-64 years	139.5	132.8	125.3	144.0	124.6	98.3	123.4	136.7	142.2
65 years and over	100.6	103.0	105.6	109.2	98.1	75.7	91.3	105.5	102.4

[1] Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.
[2] Included in restricted-activity days.
[3] The 1974 estimates are artificially low because of modifications in the questionnaire design for the 1973 and 1974 surveys. Since the data are collected on a calendar year basis, the 1973 and 1975 estimates are also partially affected.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics: Data from the Health Interview Survey.

Table 26. Cigarette smoking status of persons 20 years of age and over, according to sex, race, and age: United States, 1965, 1976, and 1978

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Sex, race, and age	1978 Population in thousands[1]	Smoking status					
		Current smoker[2]			Former smoker		
		1965	1976	1978[3]	1965	1976	1978[3]
		Percent of persons[4]					
MALE							
Total[5]							
All ages, 20 years and over	67,136	52.4	41.9	38.5	20.5	28.9	29.7
20-24 years	9,246	59.2	45.9	38.6	9.0	12.2	12.7
25-34 years	16,139	60.7	48.5	42.5	14.7	18.3	21.4
35-44 years	11,689	58.2	47.6	42.6	20.6	27.3	28.2
45-64 years	20,616	51.9	41.3	40.1	24.1	37.1	37.1
65 years and over	9,445	28.5	23.0	23.0	28.1	44.4	46.6
White							
All ages, 20 years and over	59,619	51.5	41.2	37.7	21.4	30.0	30.8
20-24 years	8,036	58.1	45.3	38.2	9.6	13.3	12.8
25-34 years	14,233	60.1	47.7	41.5	15.5	18.9	22.0
35-44 years	10,256	57.3	46.8	41.5	21.5	28.9	29.6
45-64 years	18,585	51.3	40.6	39.5	25.1	38.1	38.2
65 years and over	8,508	27.7	22.8	22.8	28.7	45.6	47.7
Black							
All ages, 20 years and over	5,484	60.8	50.5	45.9	12.1	19.3	21.0
20-24 years	859	67.4	52.8	41.0	3.8	4.1	*11.4
25-34 years	1,347	68.4	59.4	50.0	6.7	11.8	13.4
35-44 years	927	67.3	58.8	53.6	12.3	13.8	22.4
45-64 years	1,585	57.9	49.7	48.9	15.3	28.6	28.7
65 years and over	766	36.4	26.4	28.9	21.5	33.0	27.9
FEMALE							
Total[5]							
All ages, 20 years and over	75,627	34.1	32.0	30.6	8.2	13.8	14.8
20-24 years	9,882	41.9	34.2	33.0	7.3	10.4	9.7
25-34 years	17,095	43.7	37.5	35.5	9.9	12.9	15.4
35-44 years	12,328	43.7	38.2	36.8	9.6	15.8	15.0
45-64 years	22,846	32.0	34.8	33.6	8.6	15.9	16.3
65 years and over	13,475	9.6	12.8	11.9	4.5	11.7	15.2
White							
All ages, 20 years and over	66,098	34.2	31.8	30.8	8.5	14.4	15.6
20-24 years	8,241	41.9	34.4	33.6	8.0	11.4	9.9
25-34 years	14,677	43.4	37.1	35.7	10.3	13.7	16.7
35-44 years	10,559	43.9	38.1	36.5	9.9	17.0	15.9
45-64 years	20,401	32.7	34.7	34.2	8.8	16.4	16.8
65 years and over	12,220	9.8	13.2	12.4	4.5	11.5	15.6

See footnotes at end of table.

Table 26. Cigarette smoking status of persons 20 years of age and over, according to sex, race, and age: United States, 1965, 1976, and 1978—Continued

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Sex, race, and age	1978 Population in thousands[1]	Smoking status					
		Current smoker[2]			Former smoker		
		1965	1976	1978[3]	1965	1976	1978[3]
Black		Percent of persons[4]					
All ages, 20 years and over	7,584	34.4	35.1	31.9	6.0	9.9	9.6
20-24 years	1,224	44.2	34.9	28.8	2.3	5.0	* 9.2
25-34 years	1,901	47.8	42.5	40.8	6.7	8.9	* 5.6
35-44 years	1,365	42.8	41.3	42.4	7.0	9.6	10.3
45-64 years	2,048	25.7	38.1	31.0	6.6	11.9	12.9
65 years and over	1,046	7.1	9.2	* 7.2	4.5	13.3	*10.3

[1] Includes persons with unknown present smoking status.
[2] A current smoker is a person who has smoked at least 100 cigarettes and who now smokes.
[3] Based on last 6 months of 1978.
[4] Base of percent excludes persons with unknown present smoking status.
[5] Includes all other races not shown separately.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics: Data from the Health Interview Survey.

Table 27. Cigarettes smoked per day by persons 20 years of age and over, according to sex, race, and age: United States, 1965, 1976, and 1978

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Sex, race, and age	1978 Current smokers[1] in thousands	Cigarettes smoked per day								
		Less than 15			15-24			25 or more		
		1965	1976	1978[2]	1965	1976	1978[2]	1965	1976	1978[2]
		Percent of current smokers[3]								
MALE										
Total[4]										
All ages, 20 years and over	25,698	28.3	24.2	22.3	46.3	44.8	42.3	25.4	31.0	35.5
20-24 years	3,549	34.9	31.6	29.3	49.7	49.9	49.0	15.4	18.5	21.7
25-34 years	6,826	25.7	25.5	23.3	50.0	45.8	45.0	24.3	28.7	31.7
35-44 years	4,938	23.7	19.6	16.1	44.8	41.2	38.9	31.5	39.2	45.0
45-64 years	8,225	26.7	18.5	18.5	45.3	44.1	39.2	28.0	37.4	42.3
65 years and over	2,161	47.1	39.1	36.0	39.0	42.7	41.7	13.8	18.2	22.4
White										
All ages, 20 years and over	22,372	25.9	21.4	18.5	46.8	44.9	43.1	27.4	33.7	38.4
20-24 years	3,056	32.3	27.5	26.2	50.8	52.8	50.0	16.9	19.7	23.8
25-34 years	5,873	22.8	22.1	18.3	51.1	46.5	47.0	26.1	31.4	34.7
35-44 years	4,219	21.3	17.2	12.5	44.8	40.4	39.2	33.9	42.5	48.3
45-64 years	7,295	24.6	16.2	14.8	45.4	43.3	39.0	30.0	40.4	46.2
65 years and over	1,929	44.6	37.5	33.9	40.3	42.2	44.2	15.1	20.4	21.8
Black										
All ages, 20 years and over	2,506	48.1	43.8	49.3	42.6	44.8	36.5	9.3	11.5	14.1
20-24 years	352	52.7	56.9	56.0	41.9	34.2	36.1	* 5.3	* 8.9	* 8.0
25-34 years	674	47.8	46.0	55.4	41.7	43.5	31.2	10.5	10.5	*13.3
35-44 years	497	42.5	38.5	37.8	45.5	44.8	44.5	12.0	16.7	*17.7
45-64 years	762	46.9	35.9	48.5	43.7	50.8	40.2	9.4	13.3	*11.4
65 years and over	221	64.9	53.0	*49.3	31.9	47.0	*22.6	* 3.2	* -	*28.1
FEMALE										
Total[4]										
All ages, 20 years and over	23,065	43.6	36.5	35.1	42.2	43.8	43.1	14.2	19.6	21.8
20-24 years	3,252	48.4	43.1	39.8	41.9	42.4	41.9	9.7	14.5	18.3
25-34 years	6,057	41.4	34.3	34.9	43.1	45.2	42.4	15.5	20.5	22.8
35-44 years	4,516	39.1	33.8	33.4	43.7	44.4	42.0	17.1	21.8	24.6
45-64 years	7,629	44.4	34.3	32.8	42.0	44.2	45.1	13.6	21.5	22.2
65 years and over	1,610	62.6	49.3	42.3	31.0	38.9	41.8	6.4	11.8	15.9
White										
All ages, 20 years and over	20,261	41.0	33.2	31.0	43.9	45.2	44.8	15.1	21.6	24.1
20-24 years	2,761	45.3	39.3	34.3	44.4	44.3	45.1	10.4	16.4	20.5
25-34 years	5,224	37.9	30.6	30.7	45.4	46.8	44.2	16.7	22.6	25.1
35-44 years	3,837	36.2	29.5	27.7	45.3	45.4	44.4	18.4	25.1	27.9
45-64 years	6,929	42.4	32.0	29.4	43.2	45.1	46.3	14.5	23.0	24.2
65 years and over	1,510	61.5	45.7	42.5	31.8	41.7	40.5	6.8	12.6	17.0

See footnotes at end of table.

Table 27. Cigarettes smoked per day by persons 20 years of age and over, according to sex, race, and age: United States, 1965, 1976, and 1978—Continued

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Sex, race, and age	1978 Current smokers[1] in thousands	Cigarettes smoked per day								
		Less than 15			15-24			25 or more		
		1965	1976	1978[2]	1965	1976	1978[2]	1965	1976	1978[2]
		Percent of current smokers[3]								
Black										
All ages, 20 years and over	2,409	67.7	60.0	64.7	26.4	33.8	30.3	5.9	6.1	* 5.0
20-24 years	353	73.4	65.7	77.9	22.1	31.3	*22.1	*4.5	* 3.0	* -
25-34 years	775	66.2	58.8	59.1	25.1	33.6	31.9	8.7	* 7.7	* 9.0
35-44 years	574	63.4	60.4	68.6	30.4	38.1	25.0	*6.2	* 1.4	* 6.4
45-64 years	632	69.4	53.2	64.9	26.9	36.7	33.1	*3.6	10.1	* 2.1
65 years and over	75	83.2	100.0	*34.7	*16.8	* -	*65.3	* -	* -	* -

[1] A current smoker is a person who has smoked at least 100 cigarettes and who now smokes; includes occasional smokers.
[2] Based on 6 months of data.
[3] Base of percent excludes unknown amount smoked.
[4] Includes all other races not shown separately.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics: Data from the Health Interview Survey.

Table 28. Teenage cigarette smoking, according to sex and age: United States, 1968, 1974, and 1979

(Data are based on telephone interviews of samples of the noninstitutionalized population)

Sex and age	Year		
	1968	1974	1979
	Percent who are current smokers		
Both sexes, 12-18 years	11.5	15.6	11.7
Male			
12-18 years	14.7	15.8	10.7
12-14 years	2.9	4.2	3.2
15-16 years	17.0	18.1	13.5
17-18 years	30.2	31.0	19.3
Female			
12-18 years	8.4	15.3	12.7
12-14 years	0.6	4.9	4.3
15-16 years	9.6	20.2	11.8
17-18 years	18.6	25.9	26.2

NOTE: A current smoker is a person who smokes at least once a week.

SOURCES: National Clearinghouse for Smoking and Health: Patterns and Prevalence of Teenage Cigarette Smoking, 1968, 1970, 1972, and 1974. DHEW Pub. No. (HSM) 74-8701. Health Services and Mental Health Administration. Rockville, Md., July 1974; National Institute of Education, DHEW: Unpublished data.

Table 29. Persons 18–74 years of age with serum cholesterol levels of 260 mg/100 ml or more, according to sex and age: United States, 1960–62 and 1971–74

(Data are based on physical examinations of a sample of the civilian noninstitutionalized population)

Age	Male		Percent change	Female		Percent change
	1960-62	1971-74		1960-62	1971-74	
	Percent with levels of 260 mg/100 ml or more			Percent with levels of 260 mg/100 ml or more		
18-74 years, age adjusted[1]	16.8	14.7	-12.5	22.2	17.2	-22.5
18-24 years	3.9	2.8	-28.2	4.6	3.0	-34.8
25-34 years	10.4	8.2	-21.2	7.4	5.6	-24.3
35-44 years	20.2	17.1	-15.3	12.9	9.6	-25.6
45-54 years	25.7	24.1	-6.2	28.0	24.6	-12.1
55-64 years	23.5	20.2	-14.0	49.7	35.3	-29.0
65-74 years	21.6	20.9	-3.2	51.0	40.7	-20.2

[1]Age adjusted by the direct method to the 1971-74 civilian noninstitutionalized population, using 6 age intervals.

SOURCE: National Center for Health Statistics: Total serum cholesterol levels of adults 18-74 years, United States, 1971-1974, by S. Abraham, C. Johnson, and M. Carroll. Vital and Health Statistics. Series 11-No. 205. DHEW Pub. No. (PHS) 78-1652. Public Health Service. Washington. U.S. Government Printing Office, Apr. 1978.

Table 30. Persons 18–74 years of age with elevated blood pressure, according to race, sex, and age: United States, 1960–62 and 1971–74

(Data are based on physical examinations of a sample of the civilian noninstitutionalized population)

Sex and age	Total[1]		White		Black		Total[1]		White		Black	
	1960–62	1971–74	1960–62	1971–74	1960–62	1971–74	1960–62	1971–74	1960–62	1971–74	1960–62	1971–74
Both sexes	Number in thousands with elevated blood pressure						Persons with elevated blood pressure per 100 persons					
18–74 years, age adjusted[2]	...	...	...	...	...	...	17.6	18.1	16.2	16.8	30.5	30.5
18–74 years, crude	19,661	23,171	16,131	19,359	3,380	3,672	18.2	18.1	17.0	17.0	30.2	28.2
18–24 years	532	738	463	632	69	106	3.4	3.1	3.4	3.1	4.0	3.7
25–34 years	1,146	1,777	770	1,373	317	401	5.3	6.6	4.1	5.8	14.0	13.7
35–44 years	3,176	3,492	2,380	2,738	748	696	13.4	15.5	11.5	13.6	29.0	32.0
45–54 years	4,355	5,702	3,424	4,710	899	975	21.2	24.2	19.0	22.2	38.9	44.0
55–64 years	4,954	6,257	4,206	5,354	736	865	31.7	33.2	30.1	31.4	50.1	52.6
65–74 years	5,499	5,205	4,888	4,551	611	628	49.2	40.7	47.6	39.3	71.9	55.1
Male												
18–74 years, age adjusted[2]	...	...	...	...	...	...	17.7	19.5	16.4	18.5	30.5	30.4
18–74 years, crude	9,363	11,656	7,677	10,000	1,575	1,595	18.2	19.2	17.0	18.5	30.9	27.8
18–24 years	400	544	354	485	46	59	5.6	4.8	5.6	4.9	6.2	4.6
25–34 years	794	1,159	549	912	197	244	7.7	9.1	6.1	8.2	21.8	17.7
35–44 years	1,843	2,043	1,480	1,706	333	313	16.2	18.9	14.9	17.3	28.1	38.2
45–54 years	2,130	3,022	1,707	2,611	391	401	21.2	26.8	19.5	25.8	34.0	36.8
55–64 years	2,201	2,875	1,834	2,529	366	335	29.3	32.3	27.5	31.1	49.7	49.9
65–74 years	1,995	2,014	1,753	1,757	242	243	40.1	36.6	38.2	35.3	63.3	50.1
Female												
18–74 years, age adjusted[2]	...	...	...	...	...	...	17.4	16.8	15.9	15.2	30.9	30.9
18–74 years, crude	10,299	11,515	8,454	9,359	1,806	2,077	18.1	17.1	16.9	15.7	29.7	28.6
18–24 years	132	194	109	147	23	47	1.6	1.6	1.5	1.4	2.3	2.9
25–34 years	352	618	221	461	120	157	3.1	4.4	2.3	3.7	8.8	10.2
35–44 years	1,332	1,449	901	1,033	415	383	10.8	12.3	8.4	10.1	29.9	28.3
45–54 years	2,225	2,680	1,716	2,099	509	575	21.1	21.9	18.5	18.9	43.8	50.9
55–64 years	2,754	3,382	2,372	2,825	370	530	33.9	34.0	32.3	31.7	50.5	54.5
65–74 years	3,504	3,191	3,135	2,795	369	385	56.6	43.9	55.1	42.3	79.0	58.8

[1]Includes all other races not shown separately.
[2]Age adjusted by the direct method to the 1971–74 civilian noninstitutionalized population, using 6 age intervals.

NOTE: Elevated blood pressure includes readings of either systolic pressure of 160 mmHg or more or diastolic pressure of 95 mmHg or more.

SOURCE: National Center for Health Statistics: Blood pressure levels of persons 6–74 years, United States, 1971–1974, by J. Roberts and K. Maurer. Vital and Health Statistics. Series 11-No. 203. DHEW Pub. No. (HRA) 78-1648. Health Resources Administration. Washington. U.S. Government Printing Office, Sept. 1977.

Table 31. Air pollution, according to source and type of pollutant: United States, selected years 1970–77

(Data are based on reporting by air quality monitoring stations)

Type of pollutant and year	Source					
	All sources	Transportation	Stationary fuel combustion	Industrial processes	Solid waste	Other
	Emissions in 10^6 metric tons per year					
Particulate matter						
1970	22.2	1.2	7.1	11.9	1.1	0.9
1972	19.6	1.2	6.4	10.6	0.7	0.7
1974	17.0	1.2	5.6	8.9	0.6	0.7
1975	13.7	1.1	5.0	6.5	0.5	0.6
1976	13.2	1.1	4.6	6.2	0.5	0.8
1977	12.4	1.1	4.8	5.4	0.4	0.7
Sulfur oxides						
1970	29.8	0.7	22.6	6.3	0.1	0.1
1972	29.6	0.7	22.0	6.7	0.1	0.1
1974	28.4	0.7	22.1	5.6	(1)	(1)
1975	26.1	0.7	20.8	4.6	(1)	(1)
1976	27.2	0.8	21.9	4.5	(1)	(1)
1977	27.4	0.8	22.4	4.2	(1)	(1)
Nitrogen oxides						
1970	19.6	7.4	11.1	0.6	0.3	0.2
1972	21.6	8.7	11.9	0.7	0.2	0.1
1974	21.7	8.6	12.1	0.7	0.2	0.1
1975	21.0	8.6	11.5	0.7	0.1	0.1
1976	22.8	9.4	12.4	0.7	0.1	0.2
1977	23.1	9.2	13.0	0.7	0.1	0.1
Hydrocarbons						
1970	29.5	12.2	1.5	8.6	1.7	5.5
1972	29.6	12.5	1.5	9.3	1.1	5.2
1974	28.6	11.5	1.5	9.6	0.9	5.1
1975	26.9	11.3	1.4	9.2	0.8	4.2
1976	28.7	11.6	1.5	10.1	0.8	4.7
1977	28.3	11.5	1.5	10.1	0.7	4.5
Carbon monoxide						
1970	102.2	80.5	1.3	8.0	6.2	6.2
1972	103.8	85.4	1.3	7.9	4.0	5.2
1974	99.7	81.7	1.3	8.2	3.2	5.3
1975	96.9	82.0	1.1	7.3	2.9	3.6
1976	102.9	85.1	1.2	7.8	2.9	5.9
1977	102.7	85.7	1.2	8.3	2.6	4.9

[1]Emissions of less than 50,000 metric tons per year.

NOTE: Because of modifications in methodology and use of more refined emission factors, data from this table should not be compared with data in Health, United States, 1978.

SOURCE: Air Quality Planning and Standards Division: National Air Quality Emission Trends Report, 1977. EPA-450/2-78-052. U.S. Environmental Protection Agency. Research Triangle Park, N.C., Dec. 1978.

SECTION II

Utilization of Health Resources[a]

A. Ambulatory care

Ambulatory medical care is gaining importance as a more suitable and less expensive modality of care for many health problems. Since primary care, early detection, routine treatment of health problems, and preventive care all take place in the ambulatory care setting, most people enter the health care system at the ambulatory level. Entry can be made through a variety of institutions as follows: a physician's office or group practice, a clinic, a hospital outpatient department, or a neighborhood health center. It is at these institutions that key decisions are made concerning a patient's progress through the health services system, including advancement to inpatient care.

Utilization of ambulatory care services varies with age, sex, race, region, and income. During 1977, the frequency of physician visits increased with patient age from an average of 4.1 visits per year for children under 17 years of age to 6.5 visits per year for people 65 years of age and over. This differential was even greater in 1972. From 1972 to 1977, the yearly physician visit rates for every age group were stable. Females had approximately one more visit per year than males in both 1972 and 1977, and black people had fewer visits than white people in both years.

Geographic variation in the annual number of visits was also evident in both years, but the differences narrowed during the 5-year period. People in the West had the highest rate in 1972 with 5.6 visits per year, compared with 4.6 in the South, the region with the lowest rate. By 1977, the visit rate had decreased to 5.0 in the West, but it remained 4.6 in the South.

Americans averaged 4.8 physician visits per person in 1977, including telephone contacts but excluding visits by physicians to inpatients. Among families earning less than $5,000 in 1977, there was a utilization rate of 5.8 visits per person, compared with a rate of 4.8 visits per person for those earning $25,000 or more. The development and growth of the Medicare and Medicaid programs during the late 1960's have affected this trend toward more equal utilization of health care services by income groups. From 1972 to 1977, the number of per capita visits for the lowest income group increased, while per capita visits for the highest income group decreased. Persons in the middle income categories exhibited a stable utilization pattern.

Three-fourths of the U.S. population received physician care at least once during 1977. As was the case with the number of visits, the trend in the percent contacting a physician at least once a year was toward greater equality among income groups. For instance, in 1972, only 70.1 percent of those in the lowest income category had seen a physician during the 12 months prior to interview, a smaller percent than for any other income group. By 1977, 76.2 percent of this income group had seen a physician during the 12 months prior to interview, a larger percent than observed for the middle income categories. Persons with middle incomes had only 1.6 percent fewer visits than those with the highest incomes.

The racial differential in the percent of persons with at least one contact per year has also decreased. The percent of black people receiving treatment during the 12 months prior to interview increased 7.1 percentage points, from 67.4 percent in 1972 to 74.5 percent in 1977. Among white people, the increase for this time interval was only 1.9 percent, or from 73.4 in 1972 to 75.3 in 1977.

Trends toward equality of utilization should be viewed in the light of rather marked differences in health status by income groups (see Section I). Utilization trends cannot be used to determine the extent to which health needs are actually being met. For example, although utilization rates for low income individuals are now higher than for those with high incomes, the higher levels of morbidity among the low income population may still result in a deficit in terms of actual need.

Looking at the source of care can help provide understanding of how ambulatory health services are sought and received by different population groups. There are large differences by income and race in the source or place of care. In 1977, 20 percent of all visits for the lowest income group occurred in a hospital outpatient department, compared with only 10 percent for the highest income group. Although the majority of people entered the health care system through a physician's office, the actual number of office visits per 1,000 population decreased between 1972 and 1977. There appears to be an increasing tendency to seek primary care in the hospital

[a] Prepared by Andrea Kopstein, Division of Analysis, National Center for Health Statistics.

outpatient department. This trend for more frequent use of hospital outpatient facilities was observed for all sex, race, age, and income groups. There are several reasons for this. Physicians refer their patients to hospital outpatient care because the hospital has equipment which is too expensive for the physician's office, inner cities and remote areas have an inadequate supply of physicians, and many hospital outpatient departments are open 24 hours a day. There is also evidence that some private physicians are unwilling to accept Medicaid patients.

Analysis of utilization data by purpose of encounter provides valuable information on several aspects of the health care system. These data indicate the extent to which people are receiving preventive rather than curative services. The changing characteristics of the U.S. population are reflected in these data. For example, the proportion of elderly people in the United States is increasing. Since older people generally suffer from chronic illness, they receive more medical treatment for different purposes than younger patients.

For patients of all ages, physicians reported medical or special exams as the principal reason for office visits in 1977. Acute upper respiratory infection, except influenza, was the most frequent diagnosis. Visits for this diagnosis accounted for nearly one-fifth of all visits among patients under 15 years of age. In 1973, the most common diagnosis for males 45-64 years of age was heart disease, but hypertension was most frequently diagnosed in 1977. For women 45-64 years of age, hypertension ranked as the leading diagnosis in 1973 and 1977, accounting for nearly 10 percent of all visits in each year. People 65 years of age and over showed a significantly higher visit rate for heart disease than those in the group 45-64 years of age. For men, this increase was twofold; for women, it was fourfold. In both 1973 and 1977, the ratio of heart disease to hypertension in males 65 years of age and over was 2 to 1. Among females 65 years of age and over, heart disease was a more common diagnosis than hypertension in 1973; in 1977, however, the frequencies for heart disease and hypertension were similar. These two conditions accounted for nearly one-quarter of all visits in this age group.

For all specialties of office-based ambulatory care, approximately 40 percent of all visits made in 1973 and 1977 were to family and general practice physicians (GP's). Among children under 15 years of age, however, there was a sharp rise in the number of visits to pediatricians. In 1973, the number of visits to GP's and pediatricians was about equal, each accounting for approximately 37 percent of the total visits. By 1977, 49 percent of all visits made by children under 15 years of age were to pediatricians, compared with 32 percent to GP's.

The majority of office-based physician visits were made by previously treated patients. Initial patient visits comprised only 16.5 percent of the total in 1973 and 15.8 percent in 1977.

In general, office-based ambulatory care does not focus on the treatment of problems considered serious by physicians. A large proportion of patient visits were for conditions diagnosed by physicians as not serious in 1973 and 1977 (52.5 percent and 53.9 percent, respectively). This probably indicates that a substantial amount of preventive care, routine maintenance, and care for self-limiting conditions is provided during visits to private physicians' offices. However, for patients over 44 years of age, the percent of those with a medical problem considered as serious generally increased with age.

Duration of visit refers to the time spent by the physician in a direct encounter with the patient. In both 1973 and 1977, about half of all office visits lasted 10 minutes or less. In 1977, the percent of visits lasting 10 minutes or less ranged from about 60 percent for people under 15 years of age to 40 percent for people 65 years of age and over. Visits in nonmetropolitan areas and the South and North Central Regions were more frequently of a short duration than visits in metropolitan areas and in the West and Northeast Regions. Those areas with shorter visits have smaller physician-population ratios. In areas with physician shortages, doctors must see an increased number of patients, which does not allow time for long visits.

The disposition of a visit reflects a physician's intent regarding ongoing care. Continuity of care is important, especially for aging and chronically ill patients. In both 1973 and 1977, nearly 60 percent of physician visits resulted in a return visit being scheduled. This also illustrates that a substantial part of utilization is determined by the provider rather than the consumer. A strong relationship was observed between a patient's age and the frequency of followup visits. For example, in 1977, 45.3 percent of visits for patients under 15 years of age resulted in the scheduling of a return visit, compared with 73.3 percent of visits for patients 65 years of age and over.

The disadvantaged socioeconomic groups have not demonstrated as much improvement in the utilization of dental care as they have in the utilization of medical and hospital care; variations by income are pronounced. Despite an increase over time in the percent of low income patients receiving treatment by a dentist, and a slight decrease in utilization for the higher income groups, the gap between the income levels remained substantial in 1977. The nonpoor utilize dental services much more than the poor. This pattern contrasts with that for hosipitalization and medical care where the low income groups have higher utilization rates than the middle and high income groups. Only 32.8 percent of those in the lowest income group had professional dental care in 1972, whereas the figure for those in the highest income group was 71.2 percent. In 1977, 36.8 percent of those in the lowest income group had dental care during the year prior to interview, whereas 68 percent of those in the higher income group had a yearly visit. Even a middle level income appears to be a barrier to dental care with only 48 percent receiving dental care in 1977. Even with dental insurance becoming more common, most health insurance plans still do not cover dental treatment. Access to dental care is more difficult because Medicare does not cover dental expenses. In some States, Medicaid provides very limited dental coverage. This lack of coverage adds to the variation in utilization of dental care by age as well as income. Only

26.9 percent of persons 65 years of age and over had seen a dentist during a 1-year period in 1972. The percentage of people with at least one visit to a dentist in 1977 increased to only 31.4 percent for people over 65 years of age, compared with 51 percent of all people under 65 years of age. In addition to financial barriers, people's attitudes also affect the utilization of dental services. Some people view dental care as elective service instead of recognizing it as necessary preventive care.

Although preventive care programs should be part of the health care system at every level, this is not true for health services in the United States. Some of the few organizations that systematically provide preventive care are the Health Maintenance Organizations (HMO's) where comprehensive health services are offered for a fixed monthly fee. Other institutions currently focusing on preventive care include school health programs, well-baby clinics, and family planning clinics.

Family planning services are utilized by many women 15-44 years of age. For married fecund women in this age group, 57.9 percent reported having family planning visit at some time during the 3-year period prior to the 1976 National Survey of Family Growth, compared with 51.2 percent in the 3-year period prior to 1973. This increase in the percent of family planning visits was greatest for white women. The percent of black and Hispanic women making family planning visits remained virtually the same for 1973 and 1977.

In total and by race, the majority of wives counseled in family planning were advised by their private physician rather than the organized family planning program. However, there was a differential observed between income groups in selecting the place of family planning counseling. Among poorer women, 66.5 percent visited with their own physician in 1973 and in 1976. A larger percent of high income women had a family planning visit with their own physician in 1973 and in 1976 (85.6 percent and 87.5 percent, respectively).

B. Inpatient care

Most of the hospital care in the United States is provided in short-stay hospitals. In 1977, there were 36.8 million discharges (excluding newborns) from all short-stay hospitals (including Federal hospitals), compared with 33.3 million discharges in 1972, an increase of 11 percent. Days of care increased from 274.3 million in 1972 to 291.9 million in 1977, a 6-percent increase. The smaller percent increase in days of care reflects a decline in the average length of stay during the 5-year period, from 8.2 to 7.9 days. When we take into account the 4-percent increase in the total population and the rapid increase in the number of people in the oldest age groups between 1972 and 1977, the increases in hospital utilization were very small.

In 1977, 95 percent of all discharges and 92 percent of all days of care were in non-Federal short-stay hospitals. Childbirth was the major reason for hospitalization in non-Federal short-stay hospitals, accounting for 9 percent of all discharges in 1977. Heart disease followed close behind with 8 percent of all discharges, but accounted for a higher proportion of all days of care (11 percent versus 5 percent). Cancer was the third highest cause of hospitalization (5 percent of discharges and 8 percent of all days of care).

Discharge rates for deliveries declined from 1972 to 1977, but rates for heart disease, cancer, fracture, and neuroses and nonpsychotic mental disorders increased. Days of care, however, increased only for cancer and neuroses and nonpsychotic mental disorders, with virtually no change for heart disease. This is attributable to substantial decreases in the lengths of stay for each of these diagnoses.

The use of non-Federal short-stay hospitals varies among age groups of the population. In general, use of hospital services increases with age. Between 1972 and 1977, the discharge rate rose slightly for all people 15 years of age and over but remained constant for children under 15 years of age. Older people have higher discharge rates than younger people. Since the proportion of our population over 65 years of age has increased, the total discharge rate increased from 153.5 per 1,000 people in 1972 to 163.3 in 1977. This actually represents a stabilization in utilization patterns. For the elderly (those 65 years of age and over), the discharge rate increased from 332.9 per 1,000 people in 1972 to 374.4 in 1977. There were 4,281.5 days of care per 1,000 population for this group in 1977, compared with 4,248.7 in 1972. These slight increases are a reflection of the changing age distribution of our elderly population. People 85 years of age and over are now a greater proportion of the 65 years of age and over group and they need more hospitalization.

The elderly also tend to stay in the hospital for longer periods. In 1977, the average length of stay ranged from 4.2 days for children under 15 years of age to 11.1 days for adults 65 years of age and over. Lengths of stay for all ages declined by about 6 percent between 1972 and 1977.

Older people are usually hospitalized for chronic conditions, while younger people are normally hospitalized for acute conditions such as infections and injuries. For the elderly, the most common diagnoses in 1977 included such things as heart disease, malignant neoplasms, and cerebrovascular disease (stroke). For the younger groups, diagnoses such as fracture, pneumonia, and bronchitis were more frequent.

Trends in hospitalization by various sociodemographic measures can be obtained from the Health Interview Survey (HIS), conducted by the National Center for Health Statistics. A different data collection procedure is used for HIS than for the National Hospital Discharge Survey (NHDS), which is the source of the data reported above. This results in a slightly different picture of overall trends. In particular, HIS includes hospitalization in Federal hospitals but excludes hospitalization for patients who live in nursing homes, patients who die in the hospital, and patients who stay in the hospital less than one day. Thus for 1977, the HIS data show a hospital discharge rate of 122.1 per 1,000, compared with 163.3 for HDS. Furthermore, HIS data show a decrease of 1 percent in the

discharge rate between 1972 and 1977, whereas the HDS data show a 6-percent increase.

Differences in data bases should be kept in mind as HIS data are used to illustrate some interesting variation in hospital utilization by race, income, and residence. As was the case with ambulatory care utilization, black-white differentials have been changing. In 1972, black people had 5 percent fewer discharges per 1,000 than white people; but in 1977, the black rate was 9 percent greater than the white rate. Although the length of stay for black people declined more rapidly than that for white people, black people stayed in the hospital an average of more than 2 days longer than white people.

Income differentials in hospital utilization also increased between 1972 and 1977. In 1972, the lowest income group had 45 percent more discharges per 1,000 population than the highest income group; in 1977, the difference was 69 percent. In both years there was a consistent increase in both the discharge rate and length of stay as income decreased. Persons in the lowest income group stayed in the hospital an average of 2.4 days more than those in the highest income group in 1977, reflecting in part the poorer health of the low income individuals. Between 1972 and 1977, lengths of stay for every income group decreased.

Regional patterns in hospital utilization remained consistent between 1972 and 1977, except for a 7-percent decrease in the discharge rate in the West Region. In 1977, the West and Northeast Regions had the lowest discharge rates, and the South and North Central had the highest; there was a 21-percent difference in rates between the West (lowest) and the South (highest). Lengths of stay decreased for all regions with the West having the shortest stays (7.6 days) and the Northeast the longest (9.3 days). The net impact was that the West had by far the fewest hospital days per 1,000 population (834.9). The North Central had the most days (1,069.9), but the other two regions were closer to the North Central.

In both 1972 and 1977, nonmetropolitan residents had approximately 15 percent more discharges per 1,000 population than metropolitan residents. The length of stay declined at a greater rate for nonmetropolitan residents so that, in 1977, they had 1.8 fewer days per discharge than metropolitan residents. In terms of total days per 1,000 population, nonmetropolitan residents went from 3 percent more days in 1972 to 9 percent fewer days in 1977.

The services that a hospital offers vary according to the size of the hospital. The larger the bed size, the more sophisticated the facilities offered. These specialized services are more in demand by doctors for their patients and by the consumers themselves. For example, in 1977, the proportions of discharges involving surgical treatment ranged from 28 percent in hospitals with fewer than 100 beds to 49 percent in hospitals with 500 beds or more. This pattern of the larger hospitals having a greater percent of surgical discharges has remained fairly stable since 1972. Rises in discharge rates vary with hospital size. For the time period 1972–77, the largest hospitals (300–499 beds and 500 beds or more) showed the sharpest increases in discharge rates. The small to middle sized hospitals (less than 300 beds) had stable or slightly decreasing rates.

Surgical rates are also changing. Although there is no evidence of change in the prevalence of conditions leading to surgical intervention, surgical rates have continued to rise over time. The surgical rate per 1,000 population has climbed from 78.4 during 1966–67 to 94.5 during 1976–77. Some of the increases in surgical rates may be the result of changing criteria for performing surgery, the introduction of new surgical techniques, or new protocols for the management of certain conditions.

Biopsies were the most frequently performed hospital procedures in non-Federal short-stay hospitals during 1976–77. The biopsy rate for both sexes and all ages was 5.2 per 1,000 population. Data on biopsies are not available for 1966–67.

Surgical rates for children under 15 years of age remained constant from 1966–67 to 1976–77. The operation most frequently performed on inpatients in this age group was tonsillectomy, even though the rate for this procedure decreased from 14.7 per 1,000 population during 1966–67 to 8.1 per 1,000 population during 1976–77. This sharp downward trend in tonsillectomies is probably the result of a change in physician attitudes toward the effectiveness of this procedure rather than a decline in the occurrence of tonsillitis. For females under 15 years of age, the surgical rate for adenoidectomy without tonsillectomy more than doubled in this same time period.

Women 15–44 years of age had more than twice as many surgical procedures performed as men in the same age categories had. During 1976–77, this rate for females and males (per 1,000 population) was 143.5 and 58.3, respectively. This differential between males and females narrowed for the 45–64 years of age group, but the women still had a surgical rate that was 1.4 times that of the men. Among people 65 years of age and over, the pattern reversed, with males having a rate 28 percent higher than that for females.

Between 1972 and 1977, surgery utilization increased more for persons 65 years of age and over than for those in any other age group. For women, there was a 38-percent increase, compared with a 42-percent increase for men. The rate for children of both sexes under 15 years of age remained fairly constant, despite a dramatic decline in tonsillectomy. Males 15–44 years of age showed a 6-percent increase, compared with a 24-percent increase for females in this age group. Both sexes showed comparable increases for the 45–64 years of age group, 26 percent for males and 28 percent for females.

Several common surgical procedures showed substantial increases between 1966–67 and 1976–77. Cardiac catheterization increased more than tenfold among men 45–64 years of age. For women 15–44 years of age, ligation of fallopian tubes tripled, and cesarean section doubled. Dilation and curettage of the uterus increased 23 percent among women 15–44 years of age, 17 percent among women 45–64 years of age, and 20 percent among women 65 years of age and over. Hysterectomy increased 22 percent for women 15–44 years of age and 20 percent for

women 45–64 years of age. Oophorectomy increased 23 percent for women 15–44 years of age and 48 percent for women 45–64 years of age. Prostatectomy increased 41 percent for men 45–64 years of age and 17 percent for men 65 years of age and over.

On the other hand, a few procedures showed substantial decreases. As was mentioned previously, tonsillectomy rates were cut in half, although it is still the leading operation among children under 15 years of age. Repair of inguinal hernia decreased 5 percent for males under 65 years of age, and appendectomy decreased more than 20 percent for males under 45 years of age.

There is a growing concern that surgery is being used excessively in this country. This overutilization may in part be the result of an oversupply of surgeons and the availability of third-party payment for operative services. The quality and necessity of surgery has traditionally been monitored both retrospectively by utilization review committees and hospital tissue committees and prospectively by the request of the physician or patient for consultation. However, the rates for surgery have continued to increase. An additional impetus towards a more structured approach to reviewing surgery has been provided by congressional directives and media attention. Current approaches for regulating surgery include second surgical opinion programs and Professional Standards Review Organizations (PSRO's). PSRO's were established by the Government to monitor the adequacy and necessity of care given patients in health institutions under the Medicare and Medicaid programs.

Long-term care facilities include long-stay psychiatric and other hospitals (i.e., hospitals with an average length of stay of 30 days or more), nursing homes, facilities for the mentally retarded, homes for dependent children, homes or resident schools for the emotionally disturbed, resident facilities for drug abusers or alcoholics, and various other institutions. Inpatient long-term facilities provide continuing care for patients who are not expected to improve mentally or physically, and extended care to help patients who are ready to return home but still need some nursing or therapy services on a regular basis.

Most extended care facilities are in nursing homes. Nursing homes provide both restorative care for convalescing patients and continuing care for the elderly. Nursing care homes provide less intensive nursing and medical services than acute care hospitals. These homes have multiplied as the demand for these services by the elderly population has increased. The trend of greater demand is expected to continue in the future as life expectancy increases. Three reasons for greater use of these services are: Medicare and Medicaid cover these services, third-party payers apply pressure on short-stay hospitals to discharge patients no longer needing acute care services, and relatives may be unable or reluctant to care for their own elderly.

The number of nursing home residents during 1973–74 was 1,075,800, and this figure increased by 21 percent to 1,303,100 in 1977. This increase can be attributed, in part, to the growing proportion of persons 85 years of age and over. From 1973–74 to 1977, the population 85 years of age and over grew from 1,693,500 persons to 2,084,000 persons, an increase of 23 percent. The majority of nursing home residents were 65 years of age and over. This age category accounted for 89 percent of all residents in 1973–74 and 86 percent in 1977. For persons 65 years of age and over, the median age in nursing homes was 81 years of age in 1977. Two-fifths of the elderly nursing home residents were 85 years of age and over. These residents represented about 20 percent of the U.S. population in this age group. A majority of nursing home residents come from another health facility. In 1971, transfers from another health institution accounted for 54 percent of all admissions.

The relationship between sex and life expectancy is evident in the nursing home population. The ratio of women to men was approximately 3 to 1 in nursing homes in 1977.

For residents 65 years of age and over, 94.8 percent were white (excluding Hispanic) in 1973–74, compared with 93.2 percent white (excluding Hispanic) in 1977. The proportion of black residents (not Hispanic) increased from 3.9 percent to 5.4 percent for this same time period. A contributing factor to this increase is that in the U.S. population the proportion of black residents in the 85 years of age and over group went from 8 percent in 1973–74 to 9 percent in 1977. Hispanic and those in the "other races" category comprised a stable but small percent (1.0) of the residents. The marital status distribution of elderly residents has remained virtually unchanged. In 1977, the majority of residents 65 years of age and over were widowed (about 69 percent), and 14 percent were never married. Of the remainder, 12 percent were married and 4.5 percent were divorced or separated.

The most common maladies of nursing home residents were diseases of the circulatory system. The most frequent diagnoses in this category were (1) arteriosclerosis (2) stroke, (3) congestive heart failure, (4) hypertension, and (5) heart attack. Mental disorders and senility without psychosis comprised the second most common set of diagnoses.

Because of the growing feeling that, in general, long-term institutionalization in a mental hospital should be avoided, more general hospitals are providing short-term inpatient care for psychiatric patients. A patient who no longer needs the intensive services available in an acute-care facility may still need care to fill in the gap between acute care and home care. This type of service may be provided in a number of ways, including outpatient care and more extensive day treatment.

The trend toward outpatient care is evident over the period 1971–75. The number of additions (i.e., new admissions, readmissions, or returns from leave) to inpatient facilities had increased by 18.7 percent, compared with 72.7 percent for outpatient facilities. The greatest change, however, was for day treatment services with 121.8 percent more additions in 1975.

Table 32. Physician visits, according to source or place of care and selected characteristics: United States, 1972 and 1977

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Characteristic	Source or place of care							
	All sources or places[1]		Doctor's office or clinic or group practice		Hospital outpatient department[2]		Telephone	
	1972	1977	1972	1977	1972	1977	1972	1977
	Visits per 1,000 population							
Total[3,4,5]	4,966.9	4,772.3	3,436.9	3,278.5	341.9	642.1	632.1	566.8
Age								
Under 17 years	4,078.8	4,091.3	2,532.5	2,573.4	478.8	603.1	804.1	692.8
17-44 years	4,943.9	4,577.6	3,458.5	3,086.1	562.1	688.4	552.5	465.7
45-64 years	5,523.8	5,385.7	4,124.0	3,943.9	611.5	644.6	483.5	536.5
65 years and over	6,895.4	6,524.2	5,175.5	4,991.5	530.3	593.1	669.6	587.3
Sex[3]								
Male	4,317.8	4,212.6	2,949.2	2,856.4	357.7	636.9	477.3	444.3
Female	5,550.4	5,288.8	3,915.3	3,667.8	528.7	648.1	770.2	679.3
Race[3]								
White	5,054.8	4,840.7	3,567.6	3,379.7	476.9	574.7	693.3	620.1
Black	4,565.4	4,522.5	2,773.9	2,709.0	1,081.9	1,141.0	*236.1	*249.7
Family income[3,6]								
Less than $5,000	5,209.4	5,789.8	3,348.6	3,483.9	850.6	1,148.8	507.3	600.3
$5,000-$9,999	4,818.5	4,867.7	3,299.0	3,301.0	589.8	786.9	591.3	488.8
$10,000-$14,999	4,877.8	4,741.1	3,559.1	3,272.6	* 376.0	653.4	*669.7	579.4
$15,000-$24,999	5,074.6	4,712.4	3,658.6	3,332.8	* 406.6	504.0	*711.8	639.5
$25,000 or more	*5,394.7	4,757.8	*3,721.0	3,398.8	* 457.1	* 462.1	*909.3	*645.6
Geographic region[3]								
Northeast	5,203.2	4,924.9	3,431.4	3,177.4	670.8	766.5	701.9	682.6
North Central	4,813.3	4,684.0	3,382.5	3,217.9	445.7	589.7	703.4	615.4
South	4,572.3	4,621.0	3,230.6	3,269.1	482.5	609.9	548.7	450.1
West	5,575.7	4,996.9	3,972.7	3,527.7	620.1	622.8	573.6	561.5
Location of residence[3]								
Within SMSA	5,302.6	4,930.4	3,570.9	3,307.9	620.4	710.5	715.3	616.0
Outside SMSA	4,369.4	4,434.8	3,251.7	3,211.7	403.3	495.2	485.5	466.0

[1] Includes all other sources or places of care not shown separately.
[2] Includes hospital outpatient clinic or emergency room.
[3] Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.
[4] Includes all other races not shown separately.
[5] Includes unknown family income.
[6] Family income data have not been adjusted for inflation; therefore trend comparisons for the same income category may be misleading.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics: Data from the Health Interview Survey.

Table 33. Interval since last physician visit, according to selected characteristics: United States, 1972 and 1977

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Characteristic	Population in thousands		Interval since last physician visit							
			Less than 1 year		1 year-less than 2 years		2-4 years		5 years or more	
	1972	1977	1972	1977	1972	1977	1972	1977	1972	1977
			Percent of population							
Total[1,2,3]	204,148	212,153	72.6	75.1	12.1	11.3	10.5	9.3	3.9	3.3
Age										
Under 17 years	64,865	59,909	70.9	74.8	15.2	14.0	10.1	8.2	2.5	1.8
17-44 years	77,131	86,620	74.1	74.5	11.6	11.4	10.4	10.0	3.1	3.0
45-64 years	42,229	43,357	71.1	74.4	10.4	9.0	11.8	10.3	6.1	5.4
65 years and over	19,924	22,266	75.6	79.6	7.1	6.5	9.4	7.8	7.3	5.5
Sex[1]										
Male	98,445	102,384	68.8	71.1	13.2	12.4	12.5	11.2	4.6	4.1
Female	105,704	109,769	76.0	78.7	11.1	10.3	8.7	7.5	3.4	2.7
Race[1]										
White	178,727	183,910	73.4	75.3	11.9	11.1	10.2	9.4	3.8	3.2
Black	23,131	25,130	67.4	74.5	13.5	12.1	12.3	8.0	5.2	3.9
Family income[1,4]										
Less than $5,000	40,836	26,211	70.1	76.2	12.1	10.1	11.7	8.8	4.9	4.0
$5,000-$9,999	59,134	38,795	71.6	73.8	12.3	11.4	10.9	9.9	4.4	3.9
$10,000-$14,999	51,074	40,819	74.1	75.3	11.8	11.2	10.3	9.3	3.2	3.6
$15,000-$24,999	31,026	54,345	75.9	76.2	11.5	11.1	9.0	9.2	2.8	2.7
$25,000 or more	9,957	32,570	77.3	77.8	11.2	10.9	8.2	8.1	2.6	2.3
Geographic region[1]										
Northeast	48,011	48,442	73.4	75.6	12.7	11.5	9.7	8.8	3.4	3.3
North Central	55,974	56,574	72.0	75.2	11.6	11.1	11.6	9.6	4.0	3.2
South	64,128	68,906	72.0	74.3	12.5	11.9	10.2	9.2	4.3	3.4
West	36,036	38,230	73.5	75.9	11.4	10.2	10.3	9.5	3.9	3.3
Location of residence[1]										
Within SMSA	131,100	144,888	73.7	75.9	11.8	11.1	10.1	8.9	3.7	3.2
Outside SMSA	73,049	67,265	70.7	73.5	12.6	11.8	11.2	10.1	4.4	3.7

[1] Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.
[2] Includes all other races not shown separately.
[3] Includes unknown family income.
[4] Family income data have not been adjusted for inflation; therefore trend comparisons for the same income category may be misleading.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics: Data from the Health Interview Survey.

Table 34. Office visits to physicians, according to sex, age, selected principal diagnosis, and ICDA code: United States, 1973 and 1977

(Data are based on reporting by a sample of office-based physicians)

Age and principal diagnosis	ICDA code[1]	Both sexes		Male		Female	
		1973	1977	1973	1977	1973	1977
		Visits per 1,000 population					
All ages[2,3]	...	2,842.0	2,670.4	2,360.4	2,239.1	3,280.0	3,066.6
Medical or special exams	Y00	171.2	206.6	147.2	162.3	193.8	248.1
Acute URI,[4] except influenza	460-465	209.0	191.1	194.2	174.8	222.5	206.5
Prenatal care	Y06	106.1	89.8	-	-	206.0	174.7
Medical and surgical aftercare	Y10	144.3	90.2	138.9	86.3	149.6	94.0
Diseases of the heart	390-398, 402, 404, 410-414, 420-429	107.7	91.3	119.0	103.8	97.8	80.5
Hypertension	400, 401, 403	101.4	114.2	79.5	93.7	119.4	130.4
Under 15 years	...	1,976.0	2,027.0	2,042.5	2,050.1	1,906.8	2,003.1
Medical or special exams	Y00	288.9	351.4	291.3	349.3	286.4	353.6
Acute URI,[4] except in influenza	460-465	339.5	346.9	353.4	335.9	325.0	358.4
Diseases of ear and mastoid process	380-389	141.6	187.9	163.5	189.6	118.7	186.2
Infections and inflammations of skin	680-698	102.4	97.1	116.2	101.0	88.0	93.1
Bronchitis, emphysema, asthma	490-493	73.4	86.1	79.6	97.3	67.0	74.5
Medical and surgical aftercare	Y10	81.9	45.8	96.5	57.3	66.7	33.8
15-44 years[3]	...	2,710.9	2,460.7	1,852.0	1.713.2	3,520.1	3,168.4
Acute URI,[4] except influenza	460-465	172.6	146.2	134.2	123.8	208.7	167.5
Medical or special exams	Y00	160.7	183.5	108.3	99.7	210.1	262.9
Medical and surgical aftercare	Y10	129.9	86.0	104.5	76.6	153.9	95.0
Prenatal care	Y06	257.2	218.2	-	-	499.4	424.7
Neuroses and nonpsychotic disorders	300-309	144.2	135.6	97.0	104.5	188.6	165.0
Sprains and strains	840-848	94.6	80.6	110.4	90.4	79.6	71.4
45-64 years[3]	...	3,498.7	3,295.4	2,958.6	2,812.2	3,985.2	3,736.7
Diseases of the heart	390-398, 402, 404, 410-414, 420-429	198.5	162.0	240.8	207.6	160.4	120.3
Hypertension	400,401,403	236.8	286.5	193.7	238.4	275.6	330.5
Arthritis and rheumatism	710-718	169.7	168.0	113.8	139.8	220.1	193.6
Medical and surgical aftercare	Y10	201.4	129.9	190.0	101.9	211.6	155.4
Bronchitis, emphysema, asthma	490-493	107.7	76.1	86.6	74.9	126.8	77.2
65 years and over[3]	...	4,588.1	4,146.1	4,180.1	3,798.7	4,875.3	4,390.5
Diseases of the heart	390-398, 402, 404, 410-414,420-429	592.4	517.9	612.2	548.4	578.4	496.4
Hypertension	400,401,403	404.1	415.1	300.1	289.6	477.2	503.4
Arthritis and rheumatism	710-718	306.6	315.0	183.6	212.8	393.3	386.9
Eye diseases, except refractive	360-369,371-379	263.0	231.7	187.9	182.7	315.9	266.2
Medical and surgical aftercare	Y10	269.8	155.9	302.1	181.3	247.0	138.1
Diabetes mellitus	250	179.3	198.7	152.2	158.7	198.4	226.9

[1]Diagnostic groupings and code number inclusions based on the Eighth Revision International Classification of Diseases, Adapted for Use in the United States.
[2]Age adjusted by direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.
[3]Includes office visits to physicians for the most common and all other principal diagnoses.
[4]Upper respiratory infections.

NOTE: Rates are based on the civilian noninstitutionalized population, excluding Alaska and Hawaii.

SOURCE: Division of Health Resources Utilization Statistics, National Center for Health Statistics: Data from the National Ambulatory Medical Care Survey.

Table 35. Office visits to physicians, according to physician specialty and age, sex, and race of patient: United States, 1973 and 1977

(Data are based on reporting by a sample of office-based physicians)

Age, sex, and race	Specialty											
	All specialties[1]		General and family practice		Internal medicine		Obstetrics and gynecology		Pediatrics		General surgery	
	1973	1977	1973	1977	1973	1977	1973	1977	1973	1977	1973	1977
	Visits per 1,000 population											
Total[2,3]	2,842.0	2,670.4	1,193.7	1,036.1	320.4	294.7	207.2	216.5	219.3	303.9	195.2	165.5
Age												
Under 15 years	1,976.0	2,027.0	739.5	656.3	31.7	29.0	11.6	6.5	714.3	985.3	68.3	54.9
15-44 years	2,710.9	2,460.7	1,137.8	984.1	244.9	199.8	433.6	430.2	24.7	41.6	181.8	155.1
45-64 years	3,498.7	3,295.4	1,538.4	1,343.0	571.4	569.5	116.9	160.2	8.3	7.7	322.4	268.9
65 years and over	4,588.1	4,146.1	2,054.5	1,737.1	967.7	903.7	32.4	65.4	9.2	3.6	359.4	319.2
Sex[2]												
Male	2,360.4	2,239.1	1,029.8	873.8	276.3	264.0	4.9	4.2	228.7	313.2	163.4	148.4
Female	3,280.0	3,066.6	1,341.9	1,184.4	359.0	321.2	396.3	415.1	209.5	293.9	223.0	180.9
Race[2]												
White	2,889.8	2,768.4	1,194.0	1,068.4	313.3	300.4	208.4	223.8	233.6	319.0	200.6	170.0
Black	2,542.6	2,278.8	1,219.5	933.9	365.3	274.5	196.4	189.3	141.0	259.1	151.3	147.6

[1] Includes other specialties not shown separately.
[2] Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.
[3] Includes all other races not shown separately.

NOTE: Rates are based on civilian noninstitutionalized population, excluding Alaska and Hawaii.

SOURCE: Division of Health Resources Utilization Statistics, National Center for Health Statistics: Data from the National Ambulatory Medical Care Survey.

Table 36. Office visits to physicians, according to selected visit and patient characteristics: United States, 1973 and 1977

(Data are based on reporting by a sample of office-based physicians)

Patient characteristic	Visit characteristic							
	Patient's first visit		Principal problem judged not serious		Visit lasted 10 minutes or less[1]		Return visit scheduled	
	1973	1977	1973	1977	1973	1977	1973	1977
	Percent of visits							
Total[2,3]	16.5	15.9	52.5	53.9	51.2	48.7	58.8	58.0
Age								
Under 15 years	17.2	15.9	58.7	63.0	61.0	58.6	47.8	45.3
15-44 years	20.5	19.4	56.7	58.8	49.4	47.4	59.6	59.3
45-64 years	11.8	12.6	44.0	41.8	44.0	41.3	65.2	66.4
65 years and over	7.6	8.5	34.0	31.9	44.8	40.8	74.0	73.3
Sex[2]								
Male	19.0	18.0	47.9	49.3	50.7	49.3	55.9	55.3
Female	15.3	14.8	55.1	56.8	51.6	48.4	60.0	59.2
Race[2]								
White	15.9	15.3	52.7	54.0	50.7	48.7	58.6	58.0
Black	21.2	20.4	50.5	53.6	55.2	49.5	60.1	58.3
Geographic region[2]								
Northeast	15.5	14.5	51.9	53.6	43.8	43.4	63.8	61.7
North Central	14.7	14.8	53.5	54.8	59.4	56.0	58.8	56.7
South	18.0	15.9	55.9	55.9	52.5	51.2	53.9	56.1
West	16.8	19.1	45.6	49.6	46.4	41.6	61.2	58.6
Location of residence[2]								
Within SMSA	16.6	16.6	52.6	53.4	48.2	45.3	61.8	59.3
Outside SMSA	16.2	13.6	52.6	55.7	59.9	59.9	50.2	54.0

[1]Time spent in face-to-face contact between physician and patient.
[2]Age adjusted by the direct method to 1970 civilian noninstitutionalized population, using 4 age intervals.
[3]Includes all other races not shown separately.

NOTE: Rates are based on civilian noninstitutionalized population, excluding Alaska and Hawaii.

SOURCE: Division of Health Resources Utilization Statistics, National Center for Health Statistics: Data from the National Ambulatory Medical Care Survey.

Table 37. Dental visits and interval since last visit, according to selected characteristics: United States, 1972 and 1977

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Characteristic	Visits per 1,000 population		Interval since last dental visit								No visits	
			Less than 1 year		1 year-less than 2 years		2-4 years		5 years or more			
	1972	1977	1972	1977	1972	1977	1972	1977	1972	1977	1972	1977
			Percent of population									
Total[1,2,3]	1,512.5	1,612.5	47.3	49.8	11.6	12.8	14.2	12.4	13.7	13.3	12.2	10.6
Age												
Under 17 years	1,471.6	1,532.6	46.9	51.0	10.1	10.5	7.1	6.5	1.3	1.6	33.6	29.5
17-44 years	1,607.4	1,680.4	54.1	54.1	14.8	16.7	17.8	15.9	9.7	10.1	2.4	1.9
45-64 years	1,661.7	1,758.6	45.1	48.7	10.5	12.0	18.4	15.0	24.2	22.7	0.7	0.6
65 years and over	964.6	1,308.8	26.9	31.4	6.9	7.9	15.4	14.1	49.2	45.2	0.8	0.6
Sex[1]												
Male	1,332.9	1,501.6	45.5	48.1	12.0	13.0	14.9	13.0	14.2	13.9	12.2	10.8
Female	1,679.2	1,719.2	48.8	51.3	11.3	12.7	13.6	11.9	13.3	12.7	12.0	10.4
Race[1]												
White	1,622.6	1,708.9	49.8	52.1	11.4	12.5	13.5	11.8	13.3	12.8	10.9	9.8
Black	706.9	911.1	29.2	33.3	12.8	15.3	19.3	17.3	17.3	17.3	19.9	15.0
Family income[1,4]												
Less than $5,000	943.2	1,175.1	32.8	36.8	11.6	12.7	16.9	14.9	18.4	19.1	19.4	15.6
$5,000-$9,999	1,228.4	1,203.3	41.1	38.4	12.3	13.8	16.3	15.7	15.0	16.9	*14.5	*14.5
$10,000-$14,999	1,610.8	1,436.3	52.1	46.3	12.2	13.9	13.2	13.6	11.9	13.8	* 9.6	11.7
$15,000-$24,999	2,304.7	1,845.9	62.8	57.2	10.4	12.6	11.0	11.2	8.4	10.0	* 6.5	* 8.2
$25,000 or more	2,735.8	2,376.5	71.2	68.0	9.0	11.9	8.0	8.0	* 5.8	6.2	* 4.6	* 4.8
Geographic region[1]												
Northeast	1,881.0	1,902.3	51.6	54.6	12.0	12.1	12.7	11.2	12.3	12.4	10.3	* 8.7
North Central	1,432.6	1,570.1	49.2	51.9	10.5	12.4	14.1	11.8	14.5	13.9	*10.5	* 9.2
South	1,214.9	1,302.8	41.6	44.1	11.7	13.0	15.0	13.9	15.1	14.7	15.4	13.2
West	1,672.2	1,876.5	48.7	51.2	12.8	14.2	14.7	12.5	12.0	10.7	*11.0	*10.2
Location of residence[1]												
Within SMSA	1,694.3	1,784.4	49.3	51.9	11.8	13.0	13.9	11.9	12.6	11.9	11.4	10.1
Outside SMSA	1,185.1	1,246.4	43.6	45.2	11.3	12.5	14.7	13.8	15.8	16.2	13.5	11.5

[1]Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.
[2]Includes all other races not shown separately.
[3]Includes unknown family income.
[4]Family income data have not been adjusted for inflation; therefore trend comparisons for the same income category may be misleading.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics: Data from the Health Interview Survey.

Table 38. Currently married fecund women 15–44 years of age and percent with a family planning visit in the 3 years prior to interview, according to place of most recent visit, race or ethnicity, poverty level income, and age: United States, 1973 and 1976

(Data based on household interviews of samples of married women in the childbearing ages)

Race or ethnicity, poverty level income, and age	1973					1976				
	Number of women in thousands	Percent with visit in 3 years prior to interview	Place of visit			Number of women in thousands	Percent with visit in 3 years prior to interview	Place of visit		
			Total	Own physician	Organized medical services			Total	Own physician	Organized medical services
RACE OR ETHNICITY AND AGE			Percent distribution					Percent distribution		
Total										
All ages 15-44 years	23,863	51.2	100.0	82.5	17.5	22,923	57.9	100.0	84.1	15.9
15-24 years	5,953	75.5	100.0	77.5	22.5	5,978	75.6	100.0	76.8	23.2
15-19 years	1,028	69.6	100.0	72.6	27.4	1,042	76.5	100.0	63.8	36.2
25-34 years	10,797	54.5	100.0	86.1	13.9	10,869	61.4	100.0	88.1	11.9
35-44 years	7,113	25.8	100.0	83.3	16.7	6,076	34.0	100.0	86.9	13.1
White										
All ages 15-44 years	21,711	51.9	100.0	84.5	15.5	20,553	59.2	100.0	85.9	14.1
15-24 years	5,361	76.9	100.0	79.4	20.6	5,379	77.2	100.0	79.2	20.8
15-19 years	915	71.8	100.0	75.4	24.6	918	77.5	100.0	65.4	34.6
25-34 years	9,873	55.4	100.0	87.6	12.4	9,778	62.8	100.0	89.4	10.6
35-44 years	6,478	25.9	100.0	86.7	13.3	5,396	34.7	100.0	88.7	11.3
Black										
All ages 15-44 years	1,868	44.1	100.0	57.8	42.2	1,896	46.2	100.0	63.0	37.0
15-24 years	546	61.9	100.0	54.0	46.0	500	60.1	100.0	52.4	47.6
15-19 years	96	47.4	100.0	*33.9	66.1	98	70.7	100.0	64.4	*35.6
25-34 years	784	46.5	100.0	66.0	34.0	846	48.3	100.0	69.0	31.0
35-44 years	539	22.6	100.0	43.9	56.1	550	30.3	100.0	66.8	33.2
Hispanic origin[1]										
All ages 15-44 years	1,504	48.1	100.0	64.2	35.8	1,519	51.4	100.0	67.3	32.7
15-24 years	412	66.6	100.0	72.7	27.3	465	57.0	100.0	57.3	42.7
15-19 years	96	49.1	100.0	62.9	*37.1	91	*42.0	100.0	*22.5	77.5
25-34 years	563	54.1	100.0	62.1	37.9	679	59.1	100.0	69.7	30.3
35-44 years	529	27.3	100.0	52.3	47.7	375	30.7	100.0	82.9	*17.1

See footnotes at end of table.

Table 38. Currently married fecund women 15–44 years of age and percent with a family planning visit in the 3 years prior to interview, according to place of most recent visit, race or ethnicity, poverty level income, and age: United States, 1973 and 1976—Continued

(Data based on household interviews of samples of married women in the childbearing ages)

Race or ethnicity, poverty level income, and age	1973					1976				
	Number of women in thousands	Percent with visit in 3 years prior to interview	Place of visit			Number of women in thousands	Percent with visit in 3 years prior to interview	Place of visit		
			Total	Own physician	Organized medical services			Total	Own physician	Organized medical services
POVERTY LEVEL INCOME AND AGE			Percent distribution					Percent distribution		
149 percent of poverty income and below										
All ages 15-44 years	3,693	52.6	100.0	66.5	33.5	3,001	57.7	100.0	66.5	33.5
15-24 years	1,198	72.8	100.0	63.2	36.8	1,075	76.2	100.0	58.7	41.3
15-19 years	285	66.2	100.0	63.2	36.8	299	69.8	100.0	35.7	64.3
25-34 years	1,510	52.3	100.0	72.6	27.4	1,257	53.5	100.0	75.5	24.5
35-44 years	986	28.7	100.0	59.6	40.4	669	35.8	100.0	67.9	32.1
150 percent of poverty income and above										
All ages 15-44 years	20,170	50.9	100.0	85.6	14.4	17,513	59.8	100.0	87.5	12.5
15-24 years	4,755	76.2	100.0	81.0	19.0	4,345	78.0	100.0	81.8	18.2
15-19 years	743	71.0	100.0	75.9	24.1	595	82.2	100.0	75.4	24.6
25-34 years	9,287	54.9	100.0	88.2	11.8	8,501	63.9	100.0	90.0	10.0
35-44 years	6,128	25.3	100.0	87.6	12.4	4,667	35.3	100.0	90.6	9.4

[1]Includes all women reporting any Hispanic origin, regardless of race or other ethnic origins reported.

SOURCE: National Center for Health Statistics: Use of family planning services by currently married women 15-44 years of age: United States, 1973 and 1976, by G.E. Hendershot. Advance Data from Vital and Health Statistics, No. 45. DHEW Pub. No. (PHS) 79-1250. Public Health Service. Hyattsville, Md. Feb. 7, 1979.

Table 39. Discharges from and days of care in short-stay hospitals, according to type of hospital and ownership: United States, 1972 and 1977

(Data are based on reporting by facilities)

Year and type of ownership	All short-stay hospitals	Community hospitals			All other hospitals			
		Total	General	Specialty	Total	General	Psychiatric	Other
1972				Number of discharges				
All ownerships	33,255,223	31,517,446	31,163,432	354,014	1,737,777	1,600,929	102,190	34,658
Government	8,422,248	6,795,393	6,753,971	41,422	1,626,855	1,576,417	41,407	9,031
Federal	1,515,795	-	-	-	1,515,795	1,510,689	-	5,106
State-local	6,906,453	6,795,393	6,753,971	41,422	111,060	65,728	41,407	3,925
Proprietary	2,354,041	2,308,048	2,247,797	60,251	45,993	-	29,801	16,192
Nonprofit	22,478,934	22,414,005	22,161,664	252,341	64,929	24,512	30,982	9,435
1977								
All ownerships	36,776,693	34,612,817	34,238,041	374,776	2,163,876	1,942,913	169,455	51,508
Government	9,234,814	7,211,300	7,162,791	48,509	2,023,514	1,930,900	73,797	18,817
Federal	1,882,253	-	-	-	1,882,253	1,872,979	2,637	6,637
State-local	7,352,561	7,211,300	7,162,791	48,509	141,261	57,921	71,160	12,180
Proprietary	3,066,069	2,992,722	2,928,259	64,463	73,347	-	51,597	21,750
Nonprofit	24,475,810	24,408,795	24,146,991	261,804	67,015	12,013	44,061	10,941
1972				Number of days of care				
All ownerships	274,289,493	248,010,256	245,368,422	2,641,834	26,279,237	23,505,392	2,297,949	475,896
Government	78,428,418	53,857,021	53,281,372	575,649	24,571,397	23,415,153	950,020	206,224
Federal	23,086,732	-	-	-	23,086,732	22,968,340	-	118,392
State-local	55,341,686	53,857,021	53,281,372	575,649	1,484,665	446,813	950,020	87,832
Proprietary	16,154,366	15,367,547	15,049,327	318,220	786,819	-	628,174	158,645
Nonprofit	179,706,709	178,785,688	177,037,723	1,747,965	921,021	90,239	719,755	111,027
1977								
All ownerships	291,916,502	262,994,611	259,659,841	3,334,770	28,921,891	24,592,722	3,582,305	746,864
Government	79,542,762	53,150,623	52,255,430	895,193	26,392,139	24,540,499	1,543,734	307,906
Federal	24,392,845	-	-	-	24,392,845	24,135,033	128,131	129,681
State-local	55,149,917	53,150,623	52,255,430	895,193	1,999,294	405,466	1,415,603	178,225
Proprietary	21,032,130	19,685,359	19,359,517	325,842	1,346,771	-	1,112,457	234,314
Nonprofit	191,341,610	190,158,629	188,044,894	2,113,735	1,182,981	52,223	926,114	204,644

NOTE: Community hospitals include all non-Federal short-stay hospitals classified by the American Hospital Association to one of the following services: General medical and surgical; obstetrics and gynecology; eye, ear, nose, and throat; rehabilitation; orthopedic; other specialty; children's general; children's eye, ear, nose, and throat; children's rehabilitation; children's orthopedic; and children's other specialty.

SOURCE: Division of Health Manpower and Facilities Statistics, National Center for Health Statistics: Data from the Master Facility Inventory.

Table 40. Discharges from and days of care in non-Federal short-stay hospitals, according to sex, age, selected first-listed diagnosis, and ICDA code: United States, 1972 and 1977

(Data are based on a sample of hospital records)

Sex, age, and first-listed diagnosis	ICDA code[1]	Discharges		Days of care	
		1972	1977	1972	1977
Both sexes[2,3]		Number per 1,000 population			
Total[4]	...	153.5	163.3	1,188.4	1,183.1
Diseases of the heart	390-398, 402, 404, 410-414, 420-429	10.9	12.8	126.5	126.6
Malignant neoplasms	140-209	6.5	7.8	89.9	94.6
Fracture	800-829	5.5	5.6	62.9	58.9
Neuroses and nonpsychotic disorders	300-309	4.4	5.4	44.0	47.8
Pneumonia	480-486	3.7	3.5	32.0	28.7
Male					
Under 15 years[4]	...	81.6	81.4	373.1	349.9
Pneumonia	480-486	5.7	5.1	34.8	28.8
Fracture	800-829	4.5	4.4	29.4	23.2
Congenital anomalies	740-759	4.6	3.8	26.5	22.2
Inguinal hernia	550, 552	3.5	3.0	10.2	7.5
Bronchitis, emphysema, asthma	490-493	2.7	3.5	11.7	13.4
Intercranial injury	850-854	2.2	2.9	8.1	7.7
15-44 years[4]	...	91.0	98.5	611.5	621.2
Fracture	800-829	6.8	6.9	39.2	53.6
Neuroses and nonpsychotic disorders	300-309	5.4	7.1	49.9	58.8
Lacerations	870-907	4.2	3.6	20.4	17.1
Sprains and strains	840-848	3.1	3.5	18.8	20.6
Diseases of the heart	390-398, 402, 404, 410-414, 420-429	2.9	3.0	27.2	24.1
Intercranial injury	850-854	2.1	2.8	11.8	14.5
45-64 years[4]	...	173.8	195.2	1,633.1	1,679.3
Diseases of the heart	390-398, 402, 404, 410-414, 420-429	26.5	32.9	291.2	291.8
Malignant neoplasms	140-209	11.1	13.8	154.8	169.2
Neuroses and nonpsychotic disorders	300-309	7.8	10.5	66.2	93.8
Inguinal hernia	550, 552	7.6	7.1	50.7	40.1
Fracture	800-829	5.0	5.2	58.1	57.0
Ulcer	531-534	5.4	4.0	52.9	33.5
65 years and over[4]	...	360.8	396.9	4,248.7	4,281.5
Diseases of the heart	390-398, 402, 404, 410-414, 420-429	68.6	76.6	826.8	798.2
Malignant neoplasms	140-209	37.1	44.8	538.9	586.0
Cerebrovascular disease	430-438	22.2	20.8	290.3	263.1
Hyperplasia of prostate	600	18.0	19.6	229.0	204.8
Pneumonia	480-486	13.0	13.4	149.9	153.0

See footnotes at end of table.

Table 40. Discharges from and days of care in non-Federal short-stay hospitals, according to sex, age, selected first-listed diagnosis, and ICDA code: United States, 1972 and 1977—Continued

(Data are based on a sample of hospital records)

Sex, age, and first-listed diagnosis	ICDA code[1]	Discharges		Days of care	
		1972	1977	1972	1977
		Number per 1,000 population			
Female					
Under 15 years[4]	...	63.3	65.0	282.8	264.8
Pneumonia	480-486	4.5	3.7	26.3	19.8
Fracture	800-829	2.5	2.3	16.1	11.3
Congenital anomalies	740-759	2.9	2.4	17.3	15.1
Bronchitis, emphysema, asthma	490-493	1.8	2.1	8.7	8.1
Eye diseases and conditions	360-379	1.5	1.3	3.5	3.2
15-44 years[4]	...	216.6	217.6	1,141.8	1,065.0
Delivery	650-662	72.6	67.8	292.4	259.2
Disorders of menstruation	626	7.8	8.1	30.2	27.6
Benign neoplasms	210-228	7.3	6.9	40.9	36.9
Neuroses and nonpsychotic disorders	300-309	6.2	6.8	61.4	59.3
Malignant neoplasms	140-209	3.1	3.2	31.9	25.8
Cholelithiasis (gallstones)	574	3.0	2.8	27.6	22.8
45-64 years[4]	...	179.9	201.4	1,643.7	1,696.5
Diseases of the heart	390-398, 402, 404, 410-414, 420-429	13.7	16.8	151.8	152.0
Malignant neoplasms	140-209	14.0	16.4	196.0	192.3
Benign neoplasms	210-228	8.7	8.4	62.4	52.0
Disorders of menstruation	626	7.2	7.7	29.2	26.9
Neuroses and nonpsychotic disorders	300-309	5.6	6.6	67.5	63.8
65 years and over[4]	...	312.3	358.6	3,944.7	4,068.2
Diseases of the heart	390-398, 402, 404, 410-414, 420-429	54.2	64.3	698.6	730.3
Malignant neoplasms	140-209	23.7	29.8	367.2	420.8
Fracture	800-829	21.1	22.2	381.2	357.1
Cerebrovascular disease	430-438	19.6	20.3	286.2	274.4
Eye diseases and conditions	360-379	12.2	15.9	85.6	72.4
Arthritis and rheumatism	710-718	9.0	10.6	120.4	135.6

[1] Diagnostic groupings and code number inclusions based on the Eighth Revision International Classification of Diseases, Adapted for Use in the United States.
[2] Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.
[3] Includes data for which sex was not stated.
[4] Includes all diagnoses.

NOTE: Rates are based on civilian noninstitutionalized population.

SOURCE: Division of Health Resources Utilization Statistics, National Center for Health Statistics: Data from the Hospital Discharge Survey.

Table 41. Discharges from and days of care in non-Federal short-stay hospitals for all patients and for patients with surgery, according to bed size of hospital and age of patient: United States, 1972 and 1977

(Data are based on a sample of hospital records)

Bed size of hospital and age of patient	Discharges				Days of care			
	All patients		Patients with surgery		All patients		Patients with surgery	
	1972	1977	1972	1977	1972	1977	1972	1977
	Number per 1,000 population							
All sizes								
All ages[1,2]	153.5	163.3	61.5	68.4	1,188.4	1,183.1	485.6	511.3
Under 15 years	73.7	73.3	34.0	31.6	329.5	308.2	131.7	124.0
15-44 years	156.0	159.7	66.9	74.4	886.8	849.2	408.2	405.5
45-64 years	177.2	198.4	73.4	84.7	1,642.7	1,688.3	725.8	776.2
65 years and over	332.9	374.4	95.7	118.8	4,076.8	4,156.3	1,361.1	1,555.4
6-99 beds								
All ages[1,2]	33.1	32.3	9.4	8.9	209.3	192.1	57.5	51.5
Under 15 years	15.2	13.2	5.9	4.3	53.5	42.1	17.9	12.2
15-44 years	32.2	30.2	10.8	10.6	139.5	132.4	54.4	47.0
45-64 years	35.5	38.7	10.0	10.1	246.0	250.3	74.1	70.4
65 years and over	86.2	85.3	12.4	13.3	896.7	772.2	154.3	148.4
100-199 beds								
All ages[1,2]	28.7	27.8	10.5	11.2	208.2	185.8	74.5	71.8
Under 15 years	14.3	13.4	5.9	5.3	60.1	51.8	19.7	17.9
15-44 years	29.0	27.3	11.6	12.8	149.1	128.7	61.6	58.6
45-64 years	31.1	31.6	11.8	12.4	263.0	252.1	101.4	101.8
65 years and over	65.3	64.9	17.3	19.3	787.5	689.0	236.7	225.5
200-299 beds								
All ages[1,2]	26.1	25.3	11.3	11.2	205.6	183.9	89.2	83.5
Under 15 years	13.3	12.1	6.8	5.4	58.2	49.1	25.4	19.8
15-44 years	26.1	24.6	11.7	11.9	149.5	126.6	71.2	64.2
45-64 years	30.0	29.0	13.6	13.4	284.7	247.0	133.9	119.1
65 years and over	56.5	60.2	18.5	20.5	717.5	697.2	260.8	280.7

See footnotes at end of table.

Table 41. Discharges from and days of care in non-Federal short-stay hospitals for all patients and for patients with surgery, according to bed size of hospital and age of patient: United States, 1972 and 1977—Continued

(Data are based on a sample of hospital records)

Bed size of hospital and age of patient	Discharges				Days of care			
	All patients		Patients with surgery		All patients		Patients with surgery	
	1972	1977	1972	1977	1972	1977	1972	1977
300-499 beds	Number per 1,000 population							
All ages[1,2]	36.5	44.5	16.8	20.7	303.5	340.8	135.7	159.3
Under 15 years	17.3	19.7	9.1	9.4	76.9	81.6	32.0	34.1
15-44 years	37.0	43.4	17.6	21.6	228.1	241.2	107.2	119.4
45-64 years	44.6	56.7	21.0	27.0	452.8	515.6	217.6	254.2
65 years and over	74.4	97.1	27.2	36.9	984.2	1,166.6	392.0	501.0
500 beds or more								
All ages[1,2]	29.1	33.5	13.5	16.5	261.7	281.5	128.7	145.2
Under 15 years	13.6	15.0	6.3	7.1	80.8	83.5	36.7	40.1
15-44 years	31.6	34.3	15.2	17.5	220.6	220.3	113.8	116.3
45-64 years	36.0	42.4	17.0	21.8	396.2	423.2	198.8	230.6
65 years and over	50.4	67.0	20.4	28.7	690.9	831.2	317.4	399.7

[1] Includes age not stated.
[2] Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.

NOTES: Excludes newborn infants. Rates are based on the civilian noninstitutionalized population.

SOURCE: Division of Health Resources Utilization Statistics, National Center for Health Statistics: Data from the Hospital Discharge Survey.

Table 42. Discharges from and days of care in short-stay hospitals, according to selected characteristics: United States, 1972 and 1977

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Characteristic	Discharges[1]		Days of care[1]	
	1972	1977	1972	1977
	Number per 1,000 population			
Total[2,3,4]	123.3	122.1	1,104.4	1,008.6
Age				
Under 17 years	68.8	62.6	371.6	349.6
17-44 years	115.4	110.2	817.4	773.5
45-64 years	160.3	166.0	1,678.9	1,510.5
65 years and over	262.2	274.6	3,394.1	3,042.0
Sex[2]				
Male	116.3	120.4	1,160.0	1,065.7
Female	130.3	123.7	1,048.7	951.5
Race[2]				
White	124.5	121.4	1,061.4	962.9
Black	118.2	132.9	1,409.7	1,354.9
Family income[2,5]				
Less than $5,000	142.5	158.3	1,444.2	1,541.0
$5,000-$9,999	129.2	139.8	1,191.3	1,164.3
$10,000-$14,999	119.5	124.0	1,092.3	1,051.8
$15,000-$24,999	114.1	117.4	967.6	912.1
$25,000 or more	98.4	93.4	745.6	678.8
Geographic area[2]				
Northeast	109.7	110.1	1,116.0	1,024.9
North Central	128.5	129.8	1,133.3	1,069.9
South	133.6	132.7	1,145.2	1,051.2
West	118.3	109.7	934.9	834.9
Location of residence[2]				
Within SMSA	117.6	116.5	1,085.0	1,036.3
Outside SMSA	133.7	133.8	1,120.3	946.7

[1] Excluding deliveries.
[2] Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.
[3] Includes all other races not shown separately.
[4] Includes unknown family income.
[5] Family income data have not been adjusted for inflation; therefore trend comparisons for the same income category may be misleading.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics: Data from the Health Interview Survey.

Table 43. Operations for inpatients discharged from non-Federal short-stay hospitals, according to sex, age, leading surgical category, and Seventh and Eighth Revision ICDA codes: United States, average annual 1966–67 and 1976–77

(Data are based on a sample of hospital records)

Sex, age, and leading surgical category	ICDA codes[1]		Operations			
	Seventh Revision	Eighth Revision	1966–67 average	1976–77 average	1966–67 average	1976–77 average
			Number in thousands		Number per 1,000 population	
Both sexes[2]						
Total[3]	...	...	14,912	20,623	78.4	94.5
Biopsy	—	A1-A2	—	1,145	—	5.2
Dilation and curettage of uterus	72.8	70.3-74.7	744	1,076	4.0	4.8
Hysterectomy	72.3-72.6	69.1-69.5	480	691	2.6	3.1
Tonsillectomy with or without adenoidectomy	27.1-27.2	21.1-21.2	1,119	623	5.5	3.3
Repair of inguinal hernia	40.0-40.1	38.2-38.3	519	520	2.7	2.5
Male						
Under 15 years[3]	...	...	1,422	1,249	46.7	47.2
Tonsillectomy, with or without adenoidectomy	27.1-27.2	21.1-21.2	469	218	15.4	8.2
Myringotomy	—	17.0	—	132	—	5.0
Repair of inguinal hernia	40.0-40.1	38.2-38.3	115	87	3.8	3.3
Closed reduction of fracture without fixation	[4]82.0	[4]82.0	81	65	2.7	2.5
Appendectomy[5]	45.1	41.1	79	55	2.6	2.1
15-44 years[3]	...	...	1,968	2,669	54.9	58.3
Repair of inguinal hernia	40.0-40.1	38.2-38.3	113	123	3.2	2.7
Excision of semilunar cartilage of knee joint	83.5	86.5	39	94	1.1	2.1
Appendectomy[5]	45.1	41.1	105	94	2.9	2.1
Suture of skin or mucous membrane	89.4	92.5	100	78	3.1	1.7
Biopsy	—	A1-A2	—	79	—	1.7
45-64 years[3]	...	...	1,340	2,162	81.8	104.6
Repair of inguinal hernia	40.0-40.1	38.2-38.3	131	157	8.0	7.6
Biopsy	—	A1-A2	—	147	—	7.1
Cardiac catheterization	30.4-30.5	30.2	8	104	0.4	5.0
Prostatectomy	66.1-66.3	58.1-58.3	51	78	2.7	3.8
Excision of lesion of skin and subcutaneous tissue	89.1	92.1-92.2	67	70	3.5	3.4
65 years and over[3]	...	...	1,010	1,674	129.8	184.3
Prostatectomy	66.1-66.3	58.1-58.3	149	204	19.2	22.4
Biopsy	—	A1-A2	—	152	—	16.7
Repair of inguinal hernia	40.0-40.1	38.2-38.3	80	94	10.3	10.3
Extraction of lens	[4]17.3-17.5	[4]14.4-14.6	52	84	6.7	9.3
Local excision and destruction of lesion of bladder	63.1	56.1-56.2	28	52	3.5	5.7

See footnotes at end of table.

Table 43. Operations for inpatients discharged from non-Federal short-stay hospitals, according to sex, age, leading surgical category, and Seventh and Eighth Revision ICDA codes: United States, average annual 1966–67 and 1976–77—Continued

(Data are based on a sample of hospital records)

Sex, age, and leading surgical category	ICDA codes[1]		Operations			
	Seventh Revision	Eighth Revision	1966-67 average	1976-77 average	1966-67 average	1976-77 average
Female			Number in thousands		Number per 1,000 population	
Under 15 years[3]	...	...	1,002	879	34.1	34.5
Tonsillectomy, with or without adenoidectomy	27.1-27.2	21.1-21.2	433	206	14.7	8.1
Myringotomy	—	17.0	—	85	—	3.3
Appendectomy[5]	45.1	41.1	66	41	2.3	1.6
Dilation of urethra	64.5	57.5	29	38	1.0	1.5
Closed reduction of fracture without fixation	[4]82.0	[4]82.0	42	33	1.4	1.3
Adenoidectomy without tonsillectomy	27.3	21.3	14	36	0.5	1.4
15-44 years[3]	...	...	4,574	6,937	115.4	143.5
Dilation and curettage of uterus	72.8	70.3, 74.7	486	732	12.3	15.1
Hysterectomy	72.3-72.6	69.1-69.5	284	425	7.2	8.8
Cesarean section	78.0-78.4	77.0-77.9	168	414	4.2	8.6
Ligation and division of fallopian tubes, bilateral	71.5	68.5	70	377	1.8	7.8
Biopsy	—	A1-A2	—	297	—	6.2
Oophorectomy, salpingo-oophorectomy	70.2-70.5	67.2-67.5	169	255	4.3	5.3
45-64 years[3]	...	...	2,288	3,189	111.7	140.9
Biopsy	—	A1-A2	—	275	—	12.1
Dilation and curettage of uterus	72.8	70.3, 74.7	226	293	11.0	12.9
Hysterectomy	72.3-72.6	69.1-69.5	168	222	8.2	9.8
Oophorectomy, salpingo-oophorectomy	70.2-70.5	67.2-67.5	102	168	5.0	7.4
Cholecystectomy	53.5	43.5	111	125	5.4	5.5
65 years and over[3]	...	...	1,052	1,863	104.0	143.8
Biopsy	—	A1-A2	—	162	—	12.5
Extraction of lens	[4]17.3-17.5	[4]14.4-14.6	79	156	7.8	12.0
Reduction of fracture with fixation	[4]82.2	[4]82.2	79	122	7.8	9.4
Cholecystectomy	53.5	43.5	56	65	5.6	5.0
Excision of lesion of skin and subcutaneous tissue	89.1	92.1-92.2	34	50	3.3	3.9
Dilation and curettage of uterus	72.8	70.3, 74.7	30	46	3.0	3.6

[1] Surgical groupings and code number inclusions based on the Seventh Revision and Eighth Revision International Classification of Diseases, Adapted for Use in the United States.
[2] Age adjusted by the direct method to the 1970 civilian noninstitutionalized population, using 4 age intervals.
[3] Includes operations not listed in table.
[4] These codes are modifications of ICDA codes for use in the Hospital Discharge Survey.
[5] Limited to estimated number of appendectomies, excluding those performed incidental to other abdominal surgery.

NOTE: Excludes newborn infants. Rates are based on the civilian noninstitutionalized population.

SOURCE: Division of Health Resources Utilization Statistics, National Center for Health Statistics: Data from the Hospital Discharge Survey.

Table 44. Nursing home residents, according to selected characteristics: United States, 1973–74 and 1977

(Data are based on a sample of nursing homes)

Characteristic	Residents			
	1973–74[1]		1977	
	Number	Percent distribution	Number	Percent distribution
Total	1,075,800	100.0	1,303,100	100.0
Primary diagnosis at last examination				
Diseases of the circulatory system[2]	450,300	41.9	516,800	39.7
Congestive heart failure	---	---	52,800	4.1
Heart attack	55,700	5.2	22,500	1.7
Arteriosclerosis	241,800	22.5	264,400	20.3
Hypertension	---	---	47,700	3.7
Stroke	113,400	10.5	103,500	7.9
Mental disorders and senility without psychosis[2]	262,600	24.4	266,100	20.4
Psychosis, including senile	---	---	78,500	6.0
Chronic brain syndrome	---	---	96,400	7.4
Senility without psychosis	146,800	13.6	26,600	2.0
Mental retardation	---	---	42,400	3.3
Other diagnoses[2,3]	362,900	33.7	520,200	39.9
Diabetes	---	---	71,700	5.5
Fractures	---	---	39,900	3.1
Diseases of the nervous system and sense organs	64,200	6.0	42,500	3.3
Arthritis or rheumatism	---	---	56,200	4.3
Cancer or neoplasm	25,600	2.4	28,900	2.2
Living arrangement prior to admission				
Private residence	402,900	37.5	509,400	39.1
Another health facility[4]	608,400	56.6	706,700	54.2
Boarding home, other place, or unknown	64,500	6.0	87,000	6.7
Length of stay since admission				
Less than 3 months	155,400	14.4	189,300	14.5
3 to less than 6 months	103,800	9.7	122,100	9.4
6 to less than 12 months	155,700	14.5	163,100	12.5
1 to less than 3 years	357,700	33.2	427,800	32.8
3 years or more	303,200	28.2	400,800	30.8
Median length of stay in years since admission	1.5	...	1.6	...

[1] Excludes residents in personal care or domiciliary care homes.
[2] Includes other diagnoses not listed below.
[3] Includes unknown diagnoses. Data for 1977 also includes 56,700 residents who received no physician visits while in facility.
[4] In 1977, 49.4 percent of residents admitted from another health facility had gone to that facility from a private or semiprivate residence.

NOTE: Numbers are rounded to the nearest hundred. Percents are calculated on basis of unrounded numbers.

SOURCE: Division of Health Resources Utilization Statistics, National Center for Health Statistics: Data from the National Nursing Home Survey.

Table 45. Nursing home residents 65 years of age and over, according to age, sex, race and ethnicity, and marital status: United States, 1973–74 and 1977

(Data are based on a sample of nursing homes)

Age, sex, race and ethnicity, and marital status	Residents			
	1973–74[1]		1977	
	Number	Percent distribution	Number	Percent distribution
Total 65 years and over	961,500	100.0	1,126,000	100.0
Age				
65–74 years	163,100	17.0	211,400	18.8
75–84 years	384,900	40.0	464,700	41.3
85 years and over	413,600	43.0	449,900	40.0
Median age in years	82	...	81	...
Sex				
Male	265,700	27.6	294,000	26.1
Female	695,800	72.4	832,000	73.9
Race and ethnicity				
White (not Hispanic)	911,200	94.8	1,049,400	93.2
Black (not Hispanic)	37,700	3.9	60,800	5.4
Hispanic	9,400	1.0	10,300	0.9
Other races	3,200	0.3	5,300	0.5
Marital status				
Married	117,100	12.2	135,800	12.1
Widowed	667,100	69.4	780,400	69.3
Divorced or separated	32,800	3.4	50,400	4.5
Never married	144,500	15.0	159,500	14.2

[1] Excludes residents in personal care or domiciliary care homes.

NOTE: Numbers are rounded to the nearest hundred. Percents are calculated on the basis of unrounded numbers.

SOURCE: Division of Health Resources Utilization Statistics, National Center for Health Statistics: Data from the National Nursing Home Survey.

Table 46. Additions to mental health facilities and percent change, according to service mode and type of facility: United States, 1971 and 1975

(Data are based on reporting by facilities)

Type of facility	Service mode								
	Inpatient			Outpatient			Day treatment		
	1971	1975	Percent change 1971-75	1971	1975	Percent change 1971-75	1971	1975	Percent change 1971-75
	Number of additions			Number of additions			Number of additions		
All facilities	1,269,029	1,506,856	18.7	1,378,822	2,381,646	72.7	75,545	167,567	121.8
Non-Federal psychiatric hospitals	494,640	508,936	2.9	147,383	197,520	34.0	18,448	17,370	-5.8
State and county hospitals	407,640	383,407	-5.9	129,133	164,613	27.5	16,554	14,205	-14.2
Private hospitals	87,000	125,529	44.3	18,250	32,907	80.3	1,894	3,165	67.1
Veterans Administration hospitals[1]	134,065	180,701	34.8	51,645	95,370	84.7	4,023	12,029	199.0
Non-Federal general hospital psychiatric units	519,926	543,731	4.6	282,677	263,435	-6.8	11,563	14,216	22.9
Government hospital psychiatric units	215,158	141,024	-34.5	139,077	127,461	-8.4	4,291	3,299	-23.1
Private hospital psychiatric units	304,768	402,707	32.1	143,600	135,974	-5.3	7,272	10,917	50.1
Residential treatment centers for emotionally disturbed children	11,148	12,022	7.8	10,156	19,784	94.8	994	3,431	245.2
Federally-funded community mental health centers	75,900	236,226	211.2	335,648	784,638	133.8	21,092	94,092	346.1
Freestanding outpatient clinics	-	-	-	484,677	933,748	92.7	10,642	21,928	106.1
Government	-	-	-	273,358	447,453	63.7	7,737	8,941	15.6
Private	-	-	-	211,319	486,295	130.1	2,905	12,987	337.1
Other mental health facilities	33,350	25,240	-24.3	66,636	87,151	30.8	8,783	4,501	-48.8

[1] Includes Veterans Administration neuropsychiatric hospitals and Veterans Administration general hospitals with separate psychiatric modalities.

SOURCE: National Institute of Mental Health: Unpublished data from the Division of Biometry and Epidemiology.

SECTION III

Health Care Resources[a]

A. Manpower

The number of people employed in the health care industry rose from 4.2 million in 1970 to 6.7 million in 1978[1]—an increase of nearly 60 percent. The total number of employed people in the U.S. economy as a whole rose by 20.1 percent during the same period. Therefore, about 1 out of every 7 new jobs created between 1970 and 1978 were in the health industry.

In 1978, more than one-half of all health industry personnel worked in hospitals. The 1.1 million registered nurses formed the largest health occupation group.

Both the number of physicians and the number of "other related personnel" have grown rapidly. Between 1970 and 1978, the number of medical and osteopathic physicians grew by 51 percent to 424,000. Similarly, the number of employed persons 16 years of age and over in "all other health related occupations" grew by 53 percent to 4.7 million. Showing especially large increases were the number of health administrators and health aides (excluding nurses). Both groups doubled in number between 1970 and 1978.

Approximately 91 percent (about 380,000) of all physicians were professionally active in 1977. The average annual percent increase in the number of active physicians has grown slightly each decade since 1950, 1.7 percent from 1950 to 1960, 2.2 percent from 1960 to 1970, and 2.9 percent from 1970 to 1977.

Since the population has been increasing at a slower rate than the supply of physicians, there has been an increase in the ratio of active physicians to population. This ratio grew from 14.2 per 10,000 in 1950 to 17.9 in 1977. All of this increase occurred since 1960.

In looking at trends according to physician specialty from 1970 to 1977, the proportion of active physicians in primary care remained fairly constant (just below 40 percent). However, there were changes in the number of physicians within each primary care specialty—a 49-percent increase for internal medicine, a 35-percent increase for pediatrics, and a 4-percent decrease for general practice. These changes indicate that primary care physicians are becoming more specialized. It should be noted that data on primary care general practice physicians do not distinguish between general practice and family practice. Therefore, the 4-percent decrease in general practice may mask a growth in family practice that could have resulted from the recent Federal and State backing of the family practice concept.[2]

The number of active physicians in medical specialties other than internal medicine and pediatrics increased by 15 percent since 1970, and the number of surgical specialists increased by 18 percent. General surgeons account for nearly one-third of all surgical specialists; they have grown in number by only 10 percent since 1970. Obstetricians and gynecologists form nearly one-quarter of the surgical specialists and have increased in number by 25 percent from 1970 to 1977. Orthopedists have increased in number by 29 percent since 1970 and became the third largest surgical specialty in 1977.

The remaining large specialty groups all showed increases between 1970 and 1977 as follows: anesthesiology, 29 percent; pathology, 21 percent; psychiatry, 18 percent; and radiology, 16 percent. The number of diagnostic radiologists doubled between 1970 and 1977, probably as a result of the increasing technology available in this field.

Projections by specialty group suggest that from 1980 to 1990 there will be a 49 percent increase in the number of professionally active physicians in primary care, a 39-percent increase in other medical specialties, an 18-percent increase in surgical specialties, and a 21-percent increase in other specialties. The projected increase of the population over that period is only about 10 percent.

In 1977, the number of active non-Federal physicians per 10,000 population varied from 20.4 in the Northeast Region to 14.5 in the North Central Region of the country. There is also considerable geographic variation in patient

[a] Prepared by Steven R. Machlin, Division of Analysis, National Center for Health Statistics.

[1] These data exclude people working in health related occupations who were not employed in the health care industry (as defined by the U.S. Bureau of the Census), including pharmacists in drugstores, school nurses, medical school faculty, etc.

[2] Bureau of Health Manpower: Supply and distribution of physicians and physician extenders. *Graduate Medical Education National Advisory Committee Staff Papers.* DHEW Pub. No. (HRA) 78-11. Health Resources Administration. Hyattsville, Md. 1978, p. 10.

care physicians by specialty. In 1977, these ratios per 10,000 population ranged from 5.4 in the South Region to 7.3 in the Northeast for primary care, from 0.7 in the South and North Central Regions to 1.1 in the Northeast for other medical specialties, and from 3.8 in the North Central Region to 5.2 in the Northeast for surgical specialties.

Geographic variations in the ratios of physicians and specialists to population, however, were not as large in 1977 as in 1972. These ratios increased fastest in the South Region, which had the lowest rates in 1972, and increased slowest in the Northeast, which had the highest rates in 1972. However, "in very broad geographic terms, there has been only limited progress made toward a more even distribution of practitioners, despite the recent increases in the aggregate supply of health professionals." [3] There remains a paucity of physicians in rural and inner-city areas.

It should also be noted that the geographic distribution of physicians is not necessarily an adequate indicator of the population's access to medical care. Varying productivity among medical personnel can affect the quantity and quality of patient care. The available data do not measure the extent to which productivity varies among geographic areas.

Additionally, the data do not indicate how many hours per week an "active" physician devotes to patient care or how many patients a physician actually cares for in a given week. Face-to-face contact time and the number of patients seen may vary by patient characteristics, by metropolitan and nonmetropolitan locations of the medical practice, and by the organizational structure of the medical practice.

Most physicians are in individual practice. However, group medical practice is currently being advanced as a possible approach to improving the distribution of medical services. Some researchers and policymakers have suggested that creation of such groups in rural areas, or expansion of existing groups, would attract physicians and help alleviate the relative physician manpower shortage in these areas.[4]

The Center for Health Services Research and Development of the American Medical Association conducted surveys to determine the growth of group medical practices and to describe important organizational characteristics of medical groups. Findings from these surveys indicate that almost a quarter (24 percent) of active non-Federal physicians in the United States practiced in medical groups in 1975, compared with 18 percent in 1969. Between 1969 and 1975, the annual growth rate of medical groups was 5 percent, and the annual growth rate of physicians practicing in medical groups was 9 percent.

Comparison of medical groups by geographic division shows that in 1975 the West North Central Division had the highest percent of active non-Federal physicians in group practices (39.4), and the Middle Atlantic Division had the lowest (14.3). New England had the greatest growth rates of both group practices and group physicians between 1969 and 1975. The average number of group physicians per group practice was highest in the Pacific Division (10.5) in 1975.

The numbers of health professions schools and graduates of these schools have expanded dramatically as a result of a series of Government acts and programs in the 1960's and 1970's. In 1977, there were 43 more medical schools, 17 more dental schools, and 3 more optometry schools than in 1950. The ratios of professional school graduates in 1977 to those in 1950 were 2.6 for medical and osteopathy, and 1.9 for dentistry. The number of pharmacy school graduates in 1977 was nearly double that in 1960.

The fear of a possible physician shortage that triggered these acts is beginning to be replaced by concerns about a physician surplus in the next 10 to 20 years. Projections indicate that there will be between 6 and 7 more physicians per 10,000 population in 1990 than in 1977 (24.4 versus 17.9). The Health Professions Educational Assistance Act of 1976 is designed primarily to produce more primary care practitioners and improve health services in manpower shortage areas, rather than to increase overall physician supplies.

Additionally, studies conducted by the U.S. Congressional Budget Office and the U.S. Department of Health, Education, and Welfare indicate that the future supply of nurses will probably be sufficient. There is concern that there will be an oversupply of nurses if extensive Federal aid to nursing schools is continued.

In contrast to these trends for nurses and physicians, "there appears to be a shortage of optometrists and other vision care practitioners in the United States." [5] Since the number of optometrists is growing slowly and a large number are expected to retire in the late 1980's, this shortage may increase in the future.

B. Health facilities

Inpatient health care facilities include short-stay hospitals, long-stay hospitals, nursing homes, and other facilities such as homes for the mentally retarded and the emotionally disturbed. Short-stay and long-stay hospitals are distinguished by the average length of stay of the patients discharged from them. In short-stay hospitals, the average length of stay is less than 30 days; in long-stay hospitals, the average length of stay is 30 days or more.

Most hospitals in the United States are defined as short-stay. The number of beds in short-stay hospitals increased from 1,004,854 in 1972 to 1,088,348 in 1977, a rate of

[3] Bureau of Health Manpower: *A Report to the President and Congress on the Status of Health Professions Personnel in the United States* (Advance Issue). DHEW Pub. No. (HRA) 79-93. Health Resources Administration. Hyattsville, Md. Mar. 1979, p. 1-2.

[4] Eisenberg, B., Cartwell, J.: Policies to influence the spatial distribution of physicians, a conceptual review of selected programs and empirical evidence. *Medical Care* 14:455-468, 1976.

[5] Bureau of Health Manpower: *A Report to the President and Congress on the Status of Health Professions Personnel in the United States* (Advance Issue). DHEW Pub. No. (HRA) 78-93. Health Resources Administration. Hyattsville, Md. Aug. 1978, p. VI-1.

growth of 1.6 percent per year. Short-stay hospitals accounted for 80 percent of all hospital beds in 1977, compared with about 69 percent in 1972.

About 90 percent of short-stay hospitals are community hospitals (i.e., non-Federal short-stay general and other specialty hospitals, excluding psychiatric, alcoholism, drug abuse, tuberculosis, and chronic disease hospitals, and the hospital units of institutions such as prisons). These community hospitals also account for approximately 90 percent of the beds and 94 percent of the discharges from all short-stay hospitals. Furthermore, 56 percent of the community hospitals are nonprofit institutions, 30 percent are run by State or local governments, and the remainder are proprietary. The nonprofit hospitals account for 70 percent of all community hospital beds and 71 percent of all community hospital discharges.

The growth in the number of community hospital beds was stimulated in part by the Hospital Survey and Construction Act of 1946 (commonly called the Hill-Burton Act), which initiated planning for health facilities in every State and provided Federal funds for the construction of health facilities. The number of community hospital beds per 1,000 persons in the United States increased from 3.2 in 1940 to 4.6 in 1977—a 44.0-percent increase.

Hill-Burton funds were allocated to areas with bed shortages. These allocations were partly responsible for the wide variations in the rate of growth of beds among divisions of the country. For example, the East South Central and West South Central Divisions traditionally have had low bed-to-population ratios. The number of community hospital beds per 1,000 persons in these divisions increased by more than 100 percent from 1940 to 1977, while the ratios declined 4.5 percent and 7.3 percent in the New England and Pacific Divisions, respectively. Hence, many of the divisions and States with below average bed-to-population ratios in 1940 had ratios above the national average in 1977.

However, the bed-to-population ratios still varied considerably among States in 1977, from 7.2 in the District of Columbia and 7.1 in North Dakota to 3.1 in Hawaii and Utah and 2.4 in Alaska. Geographic and social characteristics explain some of this variation. For example, one reason the District of Columbia has a large bed-to-population ratio is that it serves many residents of Maryland and Virginia. Also, the low figure for Alaska does not take into account the availability of short-stay Indian Health Service hospitals, which are not classified as community hospitals. Therefore, the distribution of community hospital beds across the country may not be as inequitable as comparisons of some of the bed-to-population ratios would indicate.

Among divisions, the West North Central had the highest bed-to-population ratio in 1977. The States in this division are characterized by relatively low physician-population ratios. People in the West North Central States rely more on inpatient care relative to ambulatory care than people in other divisions of the country.

According to the National Guidelines for Health Planning issued in 1978 by the Secretary of Health, Education, and Welfare, the number of non-Federal short-stay hospital beds (including short-stay psychiatric beds) should be less than 4.0 for every 1,000 persons in a health service area. Too many beds in an area contribute to escalating costs and may encourage improper use of hospital resources.

There is considerable variation among the States and divisions in occupancy rates. The occupancy rate for community hospitals rose steadily in most divisions of the country from 1940 to 1970. From 1970 to 1977, however, all divisions experienced slight declines in their occupancy rates. Although most divisions had higher occupancy rates in 1977 than in 1940, all except the Mid-Atlantic Division had rates below the 80-percent minimum that is recommended in the National Guidelines for Health Planning. The West North Central, West South Central, Mountain, and Pacific Divisions all had occupancy rates less than 70 percent. Since a large portion of hospital costs are fixed, these unoccupied beds create extra hospital care costs.

The ratio of full-time equivalent employees to average daily patients in community hospitals (i.e., the number of patients in a community hospital on an average day) has been increasing at a rate of almost 3 percent per year since 1960. In 1977, there was an average of 3.7 employees per patient on an average day. This represents an increase of almost 1.5 employees since 1960. The increasing technical complexity of hospital care contributed to the increase. Intensive care units, for instance, were still relatively rare in 1960. At the present time, nearly all large hospitals have such units as do many relatively small ones. The heavy staffing requirements of intensive care units and similarly technically advanced services results in increased hospital costs.

All States of the country had more employees per average daily patients in 1977 than in 1960. Vermont and Maryland are the only States where the number of employees per patient decreased between 1975 and 1977.

The number of outpatient visits per 1,000 patient days in community hospitals in the United States increased at an annual rate of 5.4 percent from 1970 to 1975. All States except South Dakota and California experienced increases in this rate from 1970 to 1975. However, between 1975 and 1977, the annual increase for the United States slowed to 1.5 percent, and 13 States experienced a decline. Thus the increasing impact of outpatient care on hospitals may be tapering off.

While short-stay hospitals have been expanding, the opposite is true for long-stay hospitals. Between 1972 and 1977, the number of long-stay hospitals (not including nursing homes) in the United States decreased from 757 to 597, and the number of long-stay hospital beds decreased from 461,598 to 277,278. Approximately 3 out of every 4 long-stay hospital beds in the 1970's have been in government-owned psychiatric hospitals. The decrease in the number of long-stay hospitals and long-stay hospital beds has been largely the result of reductions in the number of long-stay psychiatric hospitals. This trend reflects the shifting pattern of psychiatric care from long-term to short-term hospitals and from inpatient to outpatient care.

Community mental health centers and psychiatric outpatient clinics established in the 1960's and 1970's are now providing psychiatric care on an outpatient basis.

There also have been substantial decreases in the number of tuberculosis and general long-stay hospitals and accompanying hospital beds from 1972 to 1977. These decreases reflect the declining incidence of tuberculosis and the shift from general long-stay hospitals to nursing homes as a means for care.

Patterns of ownership are different for long-stay and short-stay hospitals. In 1977, approximately one-third of all short-stay hospitals were government owned, whereas almost two-thirds of all long-stay hospitals were government owned. Most of these nonprivate short- and long-stay hospitals are run by State and local governments. About one-half of the short-stay hospitals were owned by private nonprofit associations, whereas one-fourth of all long-stay hospitals were run by such associations. Only slightly more than 10 percent of both types of hospitals were owned by profitmaking enterprises.

Unlike hospitals, however, most nursing homes in 1977 were run for profit. Of the 18,900 nursing homes in the country in 1977, 14,500 were proprietary. Approximately 75 percent of the 18,900 homes were certified as providers of care either by Medicare or Medicaid.

There has been a substantial increase in the number of nursing home beds in recent years. In 1977, there were about 1.4 million beds in nursing homes in the United States. This figure represents an increase of more than 800,000 beds since 1963. However, the rate of increase has diminished considerably since 1973–74.

In general, a nursing care home must employ at least one full-time registered or licensed practical nurse and provide nursing care to at least half of the residents. However, licensing requirements vary from State to State and often include more criteria. In 1976, about 66 percent of all nursing homes were classified as nursing care homes; only 58 percent were classified as such in 1971. Some facilities were upgraded to qualify for Medicaid and Medicare payments.

The number of beds in all nursing homes per 1,000 persons 65 years of age and over in the United States has increased from 58.6 in 1971 to 61.7 in 1976. This increase reflects a 14-percent increase in beds for nursing care homes together with a 24-percent decrease in beds for other nursing homes. Increases in nursing care beds occurred in all divisions of the country except for the New England and Pacific Divisions. Decreases in beds for other nursing homes occurred in all divisions except New England and the West South Central. This trend lends further evidence to the increasing importance of nursing care homes.

In 1976, the highest ratios of nursing home beds to population 65 years of age and over were in Nebraska (118.5) and Colorado (104.3); the lowest ratios were in Florida (23.9) and Arizona (25.0). The low ratios in Florida and Arizona can be accounted for by the availability of suitable alternative living arrangements in these States for the large elderly populations. Also, the elderly population in these States is comprised largely of immigrants, whose health is probably better than elderly persons who remain in States with net outmigration.

Table 47. Persons employed in the health service industry, according to place of employment: United States, 1970–78

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Place of employment	Year								
	1970[1]	1971	1972	1973	1974	1975	1976	1977	1978
	Number of employed persons in thousands								
Total	4,246	4,741	5,043	5,303	5,554	5,865	6,122	6,328	6,673
Offices of physicians	477	539	602	612	595	607	641	677	753
Offices of dentists	222	243	277	295	292	327	325	321	360
Offices of chiropractors	19	21	26	27	28	30	27	29	---
Hospitals	2,690	2,906	3,026	3,148	3,269	3,394	3,568	3,645	3,781
Convalescent institutions	509	609	682	730	798	884	945	949	1,009
Offices of other health practitioners	42	43	46	58	65	60	68	75	83
Other health service sites	288	360	384	433	507	563	548	632	687

[1]April 1, derived from decennial census; all others are July 1 estimates.

NOTE: Totals exclude persons in health-related occupations but who are working in nonhealth industries (as classified by the U.S. Bureau of the Census) for example, pharmacists employed in drug-stores, school nurses, nurses working in private households.

SOURCES: U.S. Bureau of the Census: 1970 Census of Population, occupation by industry. Subject Reports. Final Report PC(2)-7C. Washington. U.S. Government Printing Office, Oct. 1972, p. 473; U.S. Bureau of Labor Statistics: Employment and Earnings, March 1977, January 1978, and January 1979. Vol. 24, No. 3, Vol. 25, No. 1, and Vol. 26, No. 1. Washington. U.S. Government Printing Office, Mar. 1977, Jan. 1978, and Jan. 1979, and unpublished data.

Table 48. Persons 16 years of age and over employed in selected health-related occupations: United States, 1970–78

(Data are based on household interviews of a sample of the civilian noninstitutionalized population)

Occupation	Year								
	1970[1]	1971	1972	1973	1974	1975	1976	1977	1978
	Number of persons in thousands								
Total, 16 years and over	3,103	3,443	3,621	3,806	3,973	4,169	4,341	4,517	4,753
Physicians, medical and osteopathic	281	309	328	344	346	354	368	403	424
Dentists	91	99	107	105	100	110	107	105	117
Pharmacists	110	113	126	123	127	119	123	138	136
Registered nurses	830	772	801	823	904	935	999	1,063	1,112
Therapists	75	92	115	109	132	157	159	178	189
Health technologists and technicians	260	289	315	330	371	397	436	462	498
Health administrators	84	115	118	137	150	152	162	175	184
Dental assistants	88	90	94	114	107	126	122	123	130
Health aides, excluding nursing	119	144	148	170	186	211	229	234	270
Nursing aides, orderlies, and attendants	718	866	912	942	959	1,001	1,002	1,008	1,037
Practical nurses	237	345	343	358	349	370	381	371	402
Other health-related occupations[2]	210	209	214	251	242	237	253	257	254

[1] Based on the 1970 decennial census; all other years are annual averages derived from the Current Population Survey.
[2] Includes chiropractors, optometrists, podiatrists, veterinarians, dietitians, embalmers, funeral directors, lens grinders and polishers, dental lab technicians, lay midwives, and health trainees.

SOURCES: U.S. Bureau of the Census: Census of Population, 1970, Detailed Characteristics. Final Report PC1-(D). Washington. U.S. Government Printing Office, Feb. 1973; U.S. Bureau of Labor Statistics: Employment and Earnings, January 1978, and January 1979. Vol. 25, No. 1 and Vol. 26, No. 1. Washington. U.S. Government Printing Office, Jan. 1978 and Jan. 1979, and unpublished data.

Table 49. Professionally active physicians (M.D.'s and D.O.'s), according to type of physician and number per 10,000 population: United States and outlying U.S. areas, selected years, 1950–77 estimates and 1980–90 projections

(Data are based on reporting by physicians and medical schools)

Year	Type of physician			Professionally active physicians per 10,000 population
	Total	Doctors of medicine (M.D.)	Doctors of osteopathy (D.O.)	
	Number of physicians			
1950	219,900	209,000	10,900	14.2
1960	259,500	247,300	12,200	14.2
1970	323,200	311,200	12,000	15.5
1971	334,100	322,000	12,100	15.9
1972	345,000	332,400	12,600	16.3
1973	350,100	337,000	13,100	16.4
1974	362,500	348,900	13,600	16.8
1975	378,600	364,500	14,100	17.4
1976	390,600	376,100	14,500	17.9
1977	395,200	380,200	15,000	17.9
1980	444,000	426,300	17,700	20.0
1985	519,000	495,700	23,300	22.3
1990	594,000	564,200	29,800	24.4

NOTES: Population for selected years 1950-77 includes residents in the 50 States, District of Columbia, civilians in Puerto Rico and other U.S. outlying areas; U.S. citizens in foreign countries; and the Armed Forces in the United States and abroad. For years 1980-90, the Series II projections of the total population from the U.S. Bureau of the Census were used. Estimation and projection methods of the Bureau of Health Manpower were used. The number of M.D.'s differs from the American Medical Association figures because a variant proportion of the physicians not classified by specialty is allocated into the total.

SOURCES: Bureau of Health Manpower: A Report to the President and Congress on the Status of Health Professions Personnel in the United States. DHEW Pub. No. (HRA) 78-93. Health Resources Administration. Hyattsville, Md. Aug. 1978, and selected data from Manpower Analysis Branch; U.S. Bureau of the Census: Current Population Reports. Series P-25, Nos. 336, 603, 704, 731, and 803. Washington. U.S. Government Printing Office, Apr. 1966, July 1975, July 1977, Sept. 1978, and June 1979, and unpublished data.

Table 50. Physicians (M.D.'s), according to activity: United States, selected years 1970–77

(Data are based on reporting by physicians)

Activity	Year					
	1970	1972	1974	1975	1976	1977
	Number of physicians					
Doctors of medicine	328,020	350,933	374,706	388,626	404,338	416,645
Professionally active M.D.'s	304,926	315,522	325,567	335,608	343,876	359,515
Non-Federal	278,855	290,590	300,997	309,410	318,089	340,603
Patient care	252,778	266,587	276,070	285,345	292,152	312,872
Office-based practice	187,637	197,457	202,435	211,776	213,117	229,208
General practice[1]	50,415	48,783	46,341	45,863	45,503	44,548
Other specialty	137,222	148,674	156,094	165,913	167,614	184,660
Hospital-based practice	65,141	69,130	73,635	73,569	79,035	83,664
Residents--all years[2]	45,514	49,159	54,130	53,150	58,482	58,517
Full-time hospital staff	19,627	19,971	19,505	20,419	20,553	25,147
Other professional activity[3]	26,077	24,003	24,927	24,065	25,937	27,731
Federal	26,071	24,932	24,570	26,198	25,787	18,912
Patient care	20,566	20,841	20,912	22,325	22,086	15,774
Office-based practice	2,819	1,901	1,736	1,841	1,652	902
General practice[1]	906	505	506	557	519	238
Other specialty	1,913	1,396	1,230	1,284	1,133	664
Hospital-based practice	17,747	18,940	19,176	20,484	20,434	14,872
Residents--all years[2]	5,173	3,922	4,358	4,089	3,934	3,527
Full-time hospital staff	12,574	15,018	14,818	16,395	16,500	11,345
Other professional activity[3]	5,505	4,091	3,658	3,873	3,701	3,138
Inactive M.D.'s	19,533	20,021	21,522	21,360	22,024	28,231
Not classified[4]	357	12,225	20,092	25,790	29,681	17,953
Unknown[5]	3,204	3,165	7,525	5,868	8,757	10,946

[1] Includes general practice and family practice.
[2] Includes interns and residents.
[3] Includes medical teaching, administration, research, and other.
[4] Information not available.
[5] Address not known.

NOTE: Federal and non-Federal M.D.'s in the 50 States and the District of Columbia are included.

SOURCES: Haug, J.N., Roback, G.A., and Martin, B.C.: Distribution of Physicians in the United States, 1970. Chicago. American Medical Association, 1971. (Copyright 1971: Used with the permission of the American Medical Association.); Roback, G.A.: Distribution of Physicians in the U.S., 1972. Chicago. American Medical Association, 1973. (Copyright 1973: Used with the permission of the American Medical Association.); Roback, G.A., and Mason, H.R.: Physician Distribution and Medical Licensure in the U.S., 1974. Chicago. American Medical Association, 1975. (Copyright 1975: Used with the permission of the American Medical Association.); Goodman, L.J., and Mason, H.R.: Physician Distribution and Medical Licensure in the U.S., 1975. Chicago. American Medical Association, 1976. (Copyright 1976: Used with the permission of the American Medical Association.); Goodman, L.J.: Physician Distribution and Medical Licensure in the U.S., 1976. Chicago. American Medical Association, 1977. (Copyright 1977: Used with the permission of the American Medical Association.); Department of Statistical Analysis: Physician Distribution and Medical Licensure in the U.S., 1977. Chicago. American Medical Association, 1979. (Copyright 1979: Used with the permission of the American Medical Association.)

Table 51. Professionally active physicians (M.D.'s), according to primary specialty: United States, selected years 1970–77

(Data are based on reporting by physicians)

Primary specialty	Year					
	1970	1972	1974	1975	1976	1977
	Number of physicians					
Professionally active physicians	304,926	315,522	325,567	335,608	343,876	359,515
Primary care	115,505	120,876	124,572	128,745	134,051	139,248
General practice[1]	56,804	54,357	53,152	53,714	54,631	54,361
Internal medicine	41,196	47,343	51,143	53,712	57,312	61,278
Pediatrics	17,505	19,176	20,277	21,319	22,108	23,609
Other medical specialties	17,127	16,282	17,220	18,743	18,702	19,656
Dermatology	3,937	4,166	4,414	4,594	4,755	4,844
Pediatric allergy	388	379	423	439	469	485
Pediatric cardiology	471	505	521	527	537	563
Internal medicine subspecialties[2]	12,331	11,232	11,862	13,183	12,941	13,764
Surgical specialties	84,545	89,666	92,123	94,776	97,416	100,059
General surgery	29,216	30,518	30,672	31,173	31,899	32,014
Neurological surgery	2,537	2,716	2,824	2,898	2,959	3,049
Obstetrics and gynecology	18,498	19,820	20,607	21,330	21,908	23,038
Ophthalmology	9,793	10,318	10,621	11,011	11,326	11,483
Orthopedic surgery	9,467	10,216	10,861	11,267	11,689	12,223
Otolaryngology	5,305	5,563	5,509	5,670	5,788	5,910
Plastic surgery	1,583	1,770	2,075	2,224	2,337	2,509
Colon and rectal surgery	663	645	655	655	667	652
Thoracic surgery	1,779	1,899	1,909	1,960	2,020	2,131
Urology	5,704	6,201	6,390	6,588	6,823	7,050
Other specialties	87,749	88,698	91,652	93,344	93,707	100,552
Anesthesiology	10,725	11,740	12,375	12,741	13,074	13,815
Neurology	3,027	3,438	3,791	4,085	4,374	4,577
Pathology	10,135	10,881	11,274	11,603	11,815	12,260
Forensic pathology	193	187	192	186	203	206
Psychiatry	20,901	22,319	23,075	23,683	24,196	24,689
Child psychiatry	2,067	2,242	2,384	2,557	2,618	2,877
Physical medicine and rehabilitation	1,443	1,503	1,557	1,615	1,665	1,742
Radiology	10,380	11,772	11,485	11,417	11,627	12,062
Diagnostic radiology	1,941	2,055	3,054	3,500	3,794	4,236
Therapeutic radiology	855	920	1,060	1,161	1,202	1,305
Miscellaneous[3]	26,082	21,641	21,405	20,796	19,139	22,783

[1] Includes general practice and family practice.
[2] Includes gastroenterology, pulmonary diseases, allergy, and cardiovascular diseases.
[3] Includes occupational medicine, general preventive medicine, aerospace medicine, public health, other specialties not listed, and unspecified specialties.

NOTE: Federal and non-Federal active M.D.'s in the 50 States and the District of Columbia are included. Physicians not classified, inactive physicians, and physicians with unknown address in the United States are excluded. For 1977 this includes 17,953 physicians not classified, 28,231 physicians inactive, and 10,946 physicians with unknown address.

SOURCES: Haug, J.N., Roback, G.A., and Martin, B.C.: Distribution of Physicians in the United States, 1970. Chicago. American Medical Association, 1971. (Copyright 1971: Used with the permission of the American Medical Association.); Roback, G.A.: Distribution of Physicians in the U.S., 1972. Chicago. American Medical Association, 1973. (Copyright 1973: Used with the permission of the American Medical Association.); Roback, G.A., and Mason, H.R.: Physician Distribution and Medical Licensure in the U.S., 1974. Chicago. American Medical Association, 1975. (Copyright 1975: Used with the permission of the American Medical Association.); Goodman, L.J., and Mason, H.R.: Physician Distribution and Medical Licensure in the U.S., 1975. Chicago. American Medical Association, 1976. (Copyright 1976: Used with the permission of the American Medical Association); Goodman, L.J.: Physician Distribution and Medical Licensure in the U.S., 1976. Chicago. American Medical Association, 1977. (Copyright 1977: Used with the permission of the American Medical Association.); Department of Statistical Analysis: Physician Distribution and Medical Licensure in the U.S., 1977. Chicago. American Medical Association, 1979. (Copyright 1979: Used with the permission of the American Medical Association.)

Table 52. Active non-Federal physicians (M.D.'s) per 10,000 civilian population, according to geographic region, primary specialty, and activity: United States, 1972 and 1977

(Data are based on reporting by physicians)

Year, specialty, and activity	All regions	Geographic region			
		Northeast	North Central	South	West
1972	Number of physicians per 10,000 civilian population				
Total[1]	14.7	19.0	12.6	12.1	16.6
Patient care	12.9	16.3	11.2	10.8	14.8
Office based	9.6	10.9	8.3	8.3	12.0
Hospital based	3.3	5.4	3.0	2.5	2.8
Other professional activities[2]	1.2	1.8	0.9	0.9	1.3
Primary care[3]	5.5	6.7	4.9	4.6	6.2
Patient care	5.1	6.2	4.6	4.3	5.9
Office based	4.1	4.5	3.7	3.6	5.0
Hospital based	1.1	1.7	0.9	0.8	0.9
Other professional activities[2]	0.3	0.5	0.2	0.2	0.3
Other medical specialties[4]	0.7	1.0	0.6	0.6	0.8
Patient care	0.6	0.9	0.5	0.5	0.7
Office based	0.5	0.7	0.4	0.4	0.7
Hospital based	0.1	0.1	0.1	0.1	0.1
Other professional activities[2]	0.1	0.2	0.1	0.1	0.1
Surgical specialties[5]	4.1	4.9	3.5	3.7	4.6
Patient care	3.9	4.8	3.4	3.5	4.4
Office based	3.0	3.4	2.5	2.8	3.7
Hospital based	0.9	1.4	0.8	0.8	0.7
Other professional activities[2]	0.1	0.2	0.1	0.1	0.1
1977					
Total[1]	16.7	20.4	14.5	14.7	18.9
Patient care	14.6	17.4	12.8	12.9	16.6
Office based	10.7	11.6	9.2	9.8	13.3
Hospital based	3.9	5.8	3.6	3.1	3.3
Other professional activities[2]	1.3	1.7	1.0	1.1	1.4
Primary care[3]	6.2	7.3	5.6	5.4	6.9
Patient care	5.7	6.8	5.3	5.0	6.4
Office based	4.2	4.5	3.9	3.8	5.1
Hospital based	1.6	2.3	1.5	1.2	1.4
Other professional activities[2]	0.4	0.6	0.3	0.4	0.5
Other medical specialties[4]	0.9	1.1	0.7	0.7	1.0
Patient care	0.7	1.0	0.6	0.7	0.9
Office based	0.7	0.8	0.5	0.6	0.8
Hospital based	0.1	0.1	0.1	0.1	0.1
Other professional activities[2]	0.1	0.2	0.1	0.1	0.1

See footnotes at end of table.

Table 52. Active non-Federal physicians (M.D.'s) per 10,000 civilian population, according to geographic region, primary specialty, and activity: United States, 1972 and 1977—Continued

(Data are based on reporting by physicians)

Year, specialty, and activity	All regions	Geographic region			
		North-east	North Central	South	West
	Number of physicians per 10,000 civilian population				
Surgical specialties[5]	4.5	5.2	3.8	4.2	5.0
Patient care	4.3	5.0	3.7	4.1	4.8
Office based	3.4	3.7	2.8	3.3	4.1
Hospital based	0.9	1.3	0.9	0.8	0.7
Other professional activities[2]	0.2	0.2	0.1	0.1	0.2

[1] Includes all other specialties not shown separately and those not classified.
[2] Includes medical teaching, administration, research, and other professional activities.
[3] Includes general practice, internal medicine, and pediatrics.
[4] Includes dermatology, pediatric allergy, pediatric cardiology, gastroenterology, pulmonary diseases, allergy, and cardiovascular diseases.
[5] Includes general and neurological surgery, obstetrics and gynecology, ophthalmology, orthopedic surgery, otolaryngology, plastic surgery, colon and rectal surgery, thoracic surgery, and urology.

SOURCES: Roback, G.A.: Distribution of Physicians in the U.S., 1972. Chicago. American Medical Association, 1973. (Copyright 1973: Used with the permission of the American Medical Association.); Department of Statistical Analysis: Physician Distribution and Medical Licensure in the U.S., 1977. Chicago. American Medical Association, 1979. (Copyright 1979: Used with the permission of the American Medical Association.); U.S. Bureau of the Census: Population estimates and projections. Current Population Reports. Series P-25, Nos. 727 and 799. Washington. U.S. Government Printing Office, November 1978 and April 1979.

Table 53. Group practices, group physicians, average annual rate of change, and percent of active non-Federal physicians in group practice, according to census region and geographic division: United States, 1969 and 1975

(Data are based on reporting by physicians)

Census region and geographic division	Number of group practices		Number of group physicians		Average annual rate of change 1969-75		Percent of active non-Federal physicians[1] in group practices	
	1969	1975	1969	1975	Group practice	Group physicians	1969	1975
United States	6,357	8,461	40,028	66,712	4.9	8.9	17.7	23.7
Northeast	939	1,340	6,485	12,149	8.6	11.0	9.4	15.0
New England	249	476	1,514	3,450	11.4	14.7	9.3	16.9
Middle Atlantic	690	1,064	4,971	8,699	7.5	9.8	9.5	14.3
North Central	1,982	2,543	11,820	19,230	4.2	8.4	22.0	29.5
East North Central	1,190	1,613	6,925	11,975	5.2	9.6	17.9	25.5
West North Central	792	930	4,895	7,255	2.7	6.8	32.3	39.4
South	2,001	2,539	11,258	17,845	4.0	8.0	19.5	23.3
South Atlantic	892	1,277	5,219	9,496	6.2	10.5	17.3	22.6
East South Central	406	507	1,987	3,134	3.8	7.9	19.4	24.4
West South Central	703	755	4,052	5,215	1.2	4.3	23.6	23.8
West	1,435	1,839	10,465	17,488	4.2	8.9	23.0	29.7
Mountain	358	481	1,913	3,257	5.0	9.3	22.3	27.2
Pacific	1,077	1,358	8,552	14,231	3.9	8.9	23.1	30.4

[1]Excludes interns and residents.

NOTE: Group practices and group physicians in the 50 States and the District of Columbia are included.

SOURCES: Todd, C., and McNamara, M.E.: Medical Groups in the U.S., 1969. Chicago. American Medical Association, 1971. (Copyright 1971: Used with the permission of the American Medical Association.); Goodman, L.J., Bennette, E.H., and Odem, R.J.: Group Medical Practice in the U.S., 1975. Chicago. American Medical Association, 1977. (Copyright 1977: Used with the permission of the American Medical Association.); Haug, J.N., and Roback, G.A.: Distribution of Physicians, Hospitals, and Hospital Beds in the U.S., 1969. Chicago. American Medical Association, 1970. (Copyright 1970: Used with the permission of the American Medical Association.); Goodman, L.J.: Physician Distribution and Medical Licensure in the U.S., 1975. Chicago. American Medical Association, 1976. (Copyright 1976: Used with the permission of the American Medical Association.)

Table 54. Graduates of health professions schools and number of schools, according to profession: United States, selected years, 1950–77 estimates and 1980–90 projections

(Data are based on reporting by health professions schools)

Year	Profession				
	Medicine	Osteopathy	Dentistry	Optometry	Pharmacy
	Number of graduates				
1950	5,553	373	2,830	961	---
1960	7,081	427	3,290	364	3,497
1970	8,367	432	3,749	445	4,747
1975	12,714	698	4,937	806	6,886
1977	14,393	964	5,324	1,027	7,908
1980	16,086	1,069	5,150	998	7,455
1990	18,318	1,669	5,400	1,067	7,469
	Number of schools				
1950	79	6	42	10	---
1960	86	6	47	10	76
1970	103	7	53	11	74
1975	114	9	59	12	73
1977	122	11	59	13	72
1980	121	13	60	12	72
1990	121	13	60	13	72

SOURCE: Bureau of Health Manpower: A Report to the President and Congress on the Status of Health Professions Personnel in the United States. DHEW Pub. No. (HRA) 78-93. Health Resources Administration. Hyattsville, Md., Aug. 1978, and selected data.

Table 55. Professionally active physicians (M.D.'s), according to primary specialty: United States and outlying U.S. areas, 1975 and 1977 estimates and selected 1980–90 projections

(Data are based on reporting by physicians and medical schools)

Primary specialty	Year				
	1975	1977	1980	1985	1990
	Number of physicians				
All specialties	364,480	380,180	426,350	495,750	564,210
Primary care[1]	139,920	147,370	168,670	209,220	250,880
Other medical specialties	20,360	20,810	24,520	29,210	34,000
Surgical specialties	102,840	105,760	113,820	124,770	134,820
Other specialties	101,350	106,240	119,340	132,550	144,520

[1]Includes general practice, family practice, internal medicine, and pediatrics.

NOTE: Estimation and projection methods of the Bureau of Health Manpower, Health Resources Administration, were used. These data differ from the American Medical Association data because a variant proportion of the physicians not classified by specialty is allocated back into the data.

SOURCE: Bureau of Health Manpower: A Report to the President and Congress on the Status of Health Professions Personnel in the United States. DHEW Pub. No. (HRA)78-93. Health Resources Administration. Hyattsville, Md., Aug. 1978, and selected data.

Table 56. Short-stay hospitals and beds, according to type of hospital and ownership: United States, 1972 and 1977

(Data are based on reporting by facilities)

Year and type of ownership	All short-stay hospitals	Community hospitals			All other hospitals			
		Total	General	Specialty	Total	General	Psychiatric	Other
1972				Number of hospitals				
All ownerships	6,723	6,092	5,948	144	631	492	93	46
Government	2,247	1,787	1,772	15	460	429	22	9
Federal	340	-	-	-	340	336	-	4
State-local	1,907	1,787	1,772	15	120	93	22	5
Proprietary	919	854	808	46	65	-	38	27
Nonprofit	3,557	3,451	3,368	83	106	63	33	10
1977								
All ownerships	6,637	6,028	5,882	146	609	406	152	51
Government	2,258	1,821	1,801	20	437	385	41	11
Federal	335	-	-	-	335	333	1	1
State-local	1,923	1,821	1,801	20	102	52	40	10
Proprietary	903	808	772	36	95	-	68	27
Nonprofit	3,476	3,399	3,309	90	77	21	43	13
1972				Number of beds				
All ownerships	1,004,854	905,919	895,217	10,702	98,935	87,986	8,827	2,122
Government	298,875	207,813	205,583	2,230	91,062	86,468	3,732	862
Federal	82,453	-	-	-	82,453	81,908	-	545
State-local	216,422	207,813	205,583	2,230	8,609	4,560	3,732	317
Proprietary	65,499	62,135	60,545	1,590	3,364	-	2,568	796
Nonprofit	640,480	635,971	629,089	6,882	4,509	1,518	2,527	464
1977								
All ownerships	1,088,348	983,049	969,523	13,526	105,299	88,719	13,653	2,927
Government	307,410	212,365	209,094	3,271	95,045	88,144	5,635	1,266
Federal	85,856	-	-	-	85,856	84,906	409	541
State-local	221,554	212,365	209,094	3,271	9,189	3,238	5,226	725
Proprietary	90,482	84,693	82,880	1,813	5,728	-	4,789	939
Nonprofit	690,517	685,991	677,549	8,442	4,526	575	3,229	722

NOTE: Community hospitals include all non-Federal short-stay hospitals classified by the American Hospital Association to one of the following services: general medical and surgical; obstetrics and gynecology; eye, ear, nose, and throat; rehabilitation; orthopedic; other specialty; children's general; children's eye, ear, nose, and throat; children's rehabilitation; children's orthopedic; and children's other specialty.

SOURCE: Division of Health Manpower and Facilities Statistics, National Center for Health Statistics: Data from the Master Facility Inventory.

Table 57. Community hospital beds per 1,000 population and average annual rate of change, according to geographic division and State: United States, selected years 1940–77

(Data are based on reporting by facilities)

Geographic division and State	Year							Period			
	1940[1]	1950[1]	1960[2]	1970	1975	1976	1977	1940-60[1,2]	1960-70[2]	1970-75	1975-77
	Community hospital beds per 1,000 population[3]							Average annual rate of change			
United States	3.2	3.3	3.6	4.3	4.6	4.6	4.6	0.6	1.8	1.4	-
New England	4.4	4.2	3.9	4.1	4.2	4.2	4.2	-0.6	0.5	0.5	-
Maine	3.0	3.2	3.4	4.7	4.7	4.7	4.8	0.6	3.3	-	1.1
New Hampshire	4.2	4.2	4.4	4.0	4.2	4.1	4.0	0.2	-0.9	1.0	-2.4
Vermont	3.3	4.0	4.5	4.5	4.8	4.7	4.7	1.6	-	1.3	-1.0
Massachusetts	5.1	4.8	4.2	4.4	4.6	4.6	4.6	-1.0	0.5	0.9	-
Rhode Island	3.9	3.8	3.7	4.0	3.8	3.7	3.7	-0.3	0.8	-1.0	-1.3
Connecticut	3.7	3.6	3.4	3.4	3.5	3.5	3.5	-0.4	-	0.6	-
Middle Atlantic	3.9	3.8	4.0	4.4	4.6	4.6	4.6	0.1	1.0	0.9	-
New York	4.3	4.1	4.3	4.6	4.7	4.7	4.7	-	0.7	0.4	-
New Jersey	3.5	3.2	3.1	3.6	4.0	4.1	4.1	-0.6	1.5	2.1	1.2
Pennsylvania	3.5	3.8	4.1	4.7	4.7	4.8	4.8	0.8	1.4	-	1.1
East North Central	3.2	3.2	3.6	4.4	4.7	4.7	4.7	0.6	2.0	1.3	-
Ohio	2.7	2.9	3.4	4.2	4.6	4.6	4.7	1.2	2.1	1.8	1.1
Indiana	2.3	2.6	3.1	4.0	4.4	4.4	4.5	1.5	2.6	1.9	1.1
Illinois	3.4	3.6	4.0	4.7	4.9	5.0	5.0	0.8	1.6	0.8	1.0
Michigan	4.0	3.3	3.3	4.3	4.5	4.4	4.5	-1.0	2.7	0.9	-
Wisconsin	3.4	3.7	4.3	5.2	5.1	5.3	5.0	1.2	1.9	-0.4	-1.0
West North Central	3.1	3.7	4.3	5.7	5.8	5.8	5.9	1.6	2.9	0.3	0.9
Minnesota	3.9	4.4	4.8	6.1	6.0	6.0	5.9	1.0	2.4	-0.3	-0.8
Iowa	2.7	3.2	3.9	5.6	6.0	5.9	5.8	1.9	3.7	1.4	-1.7
Missouri	2.9	3.3	3.9	5.1	5.5	5.6	5.8	1.5	2.7	1.5	2.7
North Dakota	3.5	4.3	5.2	6.8	6.7	6.7	7.1	2.0	2.7	-0.3	2.9
South Dakota	2.8	4.4	4.5	5.6	5.5	5.6	5.7	2.4	2.2	-0.4	1.8
Nebraska	3.4	4.2	4.4	6.2	6.1	6.2	6.1	1.3	3.5	-0.3	-
Kansas	2.8	3.4	4.2	5.4	5.7	5.8	5.8	2.0	2.5	1.1	0.9
South Atlantic	2.5	2.8	3.3	4.0	4.3	4.4	4.5	1.4	1.9	1.5	2.3
Delaware	4.4	3.9	3.7	3.7	3.5	3.6	3.7	-0.9	-	-1.1	2.8
Maryland	3.9	3.6	3.3	3.1	3.2	3.3	3.3	-0.8	-0.6	0.6	1.6
District of Columbia	5.5	5.5	5.9	7.4	7.1	7.3	7.2	0.4	2.3	-0.8	0.7
Virginia	2.2	2.5	3.0	3.7	4.1	4.1	4.1	1.6	2.1	2.1	-
West Virginia	2.7	3.1	4.1	5.4	5.8	5.8	5.6	2.1	2.8	1.4	-1.7
North Carolina	2.2	2.6	3.4	3.8	4.0	4.1	4.2	2.2	1.1	1.0	2.5
South Carolina	1.8	2.4	2.9	3.7	3.9	3.9	3.9	2.4	2.5	1.1	-
Georgia	1.7	2.0	2.8	3.8	4.4	4.5	4.6	2.5	3.1	3.0	2.2
Florida	2.8	2.9	3.1	4.4	4.9	5.1	5.1	0.5	3.6	2.2	2.0
East South Central	1.7	2.1	3.0	4.4	4.9	5.0	5.0	2.9	3.9	2.2	1.0
Kentucky	1.8	2.2	3.0	4.0	4.3	4.4	4.4	2.6	2.9	1.5	1.2
Tennessee	1.9	2.3	3.4	4.7	5.4	5.5	5.5	3.0	3.3	2.8	0.9
Alabama	1.5	2.0	2.8	4.3	4.9	4.9	5.0	3.2	4.4	2.6	1.0
Mississippi	1.4	1.7	2.9	4.4	4.9	5.0	5.1	3.7	4.3	2.2	2.0

See footnotes at end of table.

Table 57. Community hospital beds per 1,000 population and average annual rate of change, according to geographic division and State: United States, selected years 1940–77—Continued

(Data are based on reporting by facilities)

Geographic division and State	Year							Period			
	1940[1]	1950[1]	1960[2]	1970	1975	1976	1977	1940-60[1,2]	1960-70[2]	1970-75	1975-77
	Community hospital beds per 1,000 population[3]							Average annual rate of change			
West South Central----	2.1	2.7	3.3	4.3	4.7	4.7	4.7	2.3	2.7	1.8	-
Arkansas----------	1.4	1.6	2.9	4.2	4.6	4.8	4.8	3.7	3.8	1.8	2.2
Louisiana----------	3.1	3.8	3.9	4.2	4.7	4.6	4.7	1.2	0.7	2.3	-
Oklahoma----------	1.9	2.5	3.2	4.3	4.6	4.6	4.6	2.6	3.5	0.4	-
Texas----------	2.0	2.7	3.3	4.3	4.7	4.7	4.7	2.5	2.7	1.8	-
Mountain----------	3.6	3.8	3.5	4.3	4.0	4.0	3.9	-0.1	2.1	-1.4	-1.3
Montana----------	4.9	5.3	5.1	5.8	5.2	5.2	5.1	0.2	1.3	-2.2	-1.0
Idaho----------	2.6	3.4	3.2	4.0	3.9	3.8	3.9	1.0	2.3	-0.5	-
Wyoming----------	3.5	3.9	4.6	5.5	4.5	4.4	4.2	1.4	1.8	-3.9	-3.4
Colorado----------	3.9	4.2	3.8	4.6	4.4	4.4	4.4	-0.1	1.9	-0.9	-
New Mexico----------	2.7	2.2	2.9	3.5	3.4	3.3	3.2	0.4	1.9	-0.6	-3.0
Arizona----------	3.4	4.0	3.0	4.1	3.8	3.8	3.8	-0.6	3.2	-1.5	-
Utah----------	3.2	2.9	2.8	3.6	3.2	3.2	3.1	-0.7	2.5	-2.3	-1.6
Nevada----------	5.0	4.4	3.9	4.2	4.3	4.3	4.1	-1.2	0.7	0.5	-2.4
Pacific----------	4.1	3.2	3.1	3.7	3.9	3.8	3.8	-1.4	1.8	1.1	-1.3
Washington----------	3.4	3.6	3.3	3.5	3.4	3.4	3.3	-0.1	0.6	-0.6	-1.5
Oregon----------	3.5	3.1	3.5	4.0	3.9	3.9	3.8	-	1.3	-0.5	-1.3
California----------	4.4	3.3	3.0	3.8	4.0	3.9	3.9	-1.9	2.4	1.0	-1.3
Alaska----------	...	...	2.4	2.3	2.2	2.2	2.4	...	-0.4	-0.9	4.4
Hawaii----------	...	...	3.7	3.4	3.3	3.1	3.1	...	-0.8	-0.6	-3.1

[1] 1940 and 1950 data are estimated based on published figures.
[2] 1960 includes hospital units of institutions.
[3] Civilian population.

NOTE: Community hospitals include all non-Federal short-stay hospitals classified by the American Hospital Association to one of the following services: general medical and surgical; obstetrics and gynecology; eye, ear, nose, and throat; rehabilitation; orthopedic; other specialty; children's general; children's eye, ear, nose, and throat; children's rehabilitation; children's orthopedic; and children's other specialty.

SOURCES: American Medical Association: Hospital service in the United States. JAMA 116(11): 1055-1144, 1941, and 146(2): 109-184, 1951. (Copyright 1941 and 1951: Used with the permission of the American Medical Association.); American Hospital Association: Hospitals. JAHA 35(15): 383-430, Aug. 1, 1961. (Copyright 1961: Used with the permission of the American Hospital Association.); Division of Health Manpower and Facilities Statistics, National Center for Health Statistics: Data from the Master Facility Inventory; U.S. Bureau of the Census: Current Population Reports. Series P-25, Nos. 72, 304, 460, 640, 642, and 790. Washington. U.S. Government Printing Office, 1953, 1965, 1971, 1976, and 1978, and unpublished data.

Table 58. Occupancy rate in community hospitals and average annual rate of change, according to geographic division and State: United States, selected years 1940–77

(Data are based on reporting by facilities)

Geographic division and State	Year						Period			
	1940[1]	1960[2]	1970	1975	1976	1977	1940-60[1,2]	1960-70[2]	1970-75	1975-77
	Percent of beds occupied						Average annual rate of change			
United States	69.9	74.7	77.3	74.2	73.9	73.3	0.3	0.3	-0.8	-0.6
New England	72.5	75.2	79.7	77.6	77.5	77.3	0.2	0.6	-0.5	-0.2
Maine	72.4	73.2	73.0	71.1	72.1	69.3	0.1	-0.0	-0.5	-1.3
New Hampshire	65.3	66.5	73.4	71.4	71.3	71.7	0.1	1.0	-0.6	0.2
Vermont	68.8	68.5	76.3	70.7	74.5	75.3	-0.0	1.1	-1.5	3.2
Massachusetts	71.8	75.8	80.3	79.1	78.6	78.5	0.3	0.6	-0.3	-0.4
Rhode Island	77.7	75.7	82.9	82.2	82.1	82.0	-0.1	0.9	-0.2	-0.1
Connecticut	75.9	78.2	82.6	78.6	78.5	78.8	0.1	0.5	-1.0	0.1
Middle Atlantic	75.5	78.1	82.4	81.4	82.1	81.3	0.2	0.5	-0.2	-0.1
New York	78.9	79.4	82.9	84.2	85.1	83.8	0.0	0.4	0.3	-0.2
New Jersey	72.4	78.4	82.5	81.1	81.4	81.7	0.4	0.5	-0.3	0.4
Pennsylvania	71.3	76.0	81.5	77.2	77.8	77.3	0.3	0.7	-1.1	0.1
East North Central	71.0	78.4	79.5	77.2	76.6	75.7	0.5	0.1	-0.6	-1.0
Ohio	72.1	81.3	81.8	80.6	80.2	78.6	0.6	0.1	-0.3	-1.2
Indiana	68.5	79.6	80.3	76.4	76.7	76.0	0.8	0.1	-1.0	-0.3
Illinois	73.1	76.0	79.3	75.7	75.4	75.1	0.2	0.4	-0.9	-0.4
Michigan	71.5	80.5	80.6	78.8	77.3	76.1	0.6	0.0	-0.5	-1.7
Wisconsin	65.2	73.9	73.2	71.5	70.9	69.5	0.6	-0.1	-0.5	-1.4
West North Central	65.7	71.8	73.6	70.6	70.3	69.3	0.4	0.2	-0.8	-0.9
Minnesota	71.0	72.3	73.9	70.7	70.9	70.5	0.1	0.2	-0.9	-0.1
Iowa	63.6	72.6	71.9	67.4	67.9	66.4	0.7	-0.1	-1.3	-0.7
Missouri	68.6	75.8	79.3	75.9	74.8	73.5	0.5	0.5	-0.9	-1.6
North Dakota	61.9	71.3	67.1	69.1	68.9	66.5	0.7	-0.6	0.6	-1.9
South Dakota	59.1	66.0	66.3	63.8	62.6	62.0	0.6	0.0	-0.8	-1.4
Nebraska	59.0	65.6	69.9	65.8	66.1	65.0	0.5	0.6	-1.2	-0.6
Kansas	60.4	69.1	71.4	69.9	69.2	68.3	0.7	0.3	-0.4	-1.2
South Atlantic	66.7	74.8	77.9	73.9	73.5	73.2	0.6	0.4	-1.0	-0.5
Delaware	59.2	70.2	78.8	81.0	81.1	81.0	0.9	1.2	0.6	-
Maryland	74.6	73.9	79.3	79.3	81.9	82.8	-0.0	0.7	-	2.2
District of Columbia	76.2	80.8	77.7	78.9	76.8	78.6	0.3	-0.4	0.3	-0.2
Virginia	70.0	78.0	81.1	77.4	76.3	75.9	0.5	0.4	-0.9	-1.0
West Virginia	62.1	74.5	79.3	75.3	75.0	73.8	0.9	0.6	-1.0	-1.0
North Carolina	64.6	73.9	78.5	77.4	77.5	75.7	0.7	0.6	-0.3	-1.1
South Carolina	69.1	76.9	76.4	74.2	73.8	74.1	0.5	-0.1	-0.6	-0.1
Georgia	62.7	71.7	76.5	68.2	68.0	67.0	0.7	0.7	-2.3	-0.9
Florida	57.5	73.9	76.2	70.2	69.2	69.5	1.3	0.3	-1.6	-0.5
East South Central	62.6	71.8	78.2	74.0	73.5	73.5	0.7	0.9	-1.1	-0.3
Kentucky	61.6	73.4	79.6	77.3	77.1	76.6	0.9	0.8	-0.6	-0.5
Tennessee	65.5	75.9	78.2	74.4	73.9	73.4	0.7	0.3	-1.0	-0.7
Alabama	59.0	70.8	80.0	72.6	72.9	72.9	0.9	1.2	-1.9	0.2
Mississippi	63.8	62.8	73.6	71.4	69.4	70.9	-0.1	1.6	-0.6	-0.4

See footnotes at end of table.

Table 58. Occupancy rate in community hospitals and average annual rate of change, according to geographic division and State: United States, selected years 1940–77—Continued

(Data are based on reporting by facilities)

Geographic division and State	Year						Period			
	1940[1]	1960[2]	1970	1975	1976	1977	1940-60[1,2]	1960-70[2]	1970-75	1975-77
	Percent of beds occupied						Average annual rate of change			
West South Central	62.5	68.7	73.2	69.1	68.5	67.5	0.5	0.6	-1.1	-1.2
Arkansas	55.6	70.0	74.4	70.3	68.9	68.4	1.2	0.6	-1.1	-1.4
Louisiana	75.0	67.9	73.6	68.8	69.7	68.8	-0.5	0.8	-1.3	-
Oklahoma	54.5	71.0	72.5	69.3	67.1	66.1	1.3	0.2	-0.9	-2.3
Texas	59.6	68.2	73.0	69.0	68.4	67.3	0.7	0.7	-1.1	-1.2
Mountain	60.9	69.9	71.2	68.4	68.2	66.6	0.7	0.2	-0.8	-1.3
Montana	62.8	60.3	65.9	61.4	59.6	59.3	-0.2	0.9	-1.4	-1.7
Idaho	65.4	55.9	66.1	68.2	65.6	65.9	-0.8	1.7	0.6	-1.7
Wyoming	47.5	61.1	63.1	55.9	57.8	53.6	1.3	0.3	-2.4	-2.1
Colorado	62.1	80.6	74.0	69.1	70.5	68.0	1.3	-0.9	-1.4	-0.8
New Mexico	47.8	65.1	69.8	63.6	65.8	62.8	1.6	0.7	-1.8	-0.6
Arizona	61.2	74.2	73.3	73.5	72.8	71.0	1.0	-0.1	0.1	-1.7
Utah	65.8	70.0	73.7	73.6	69.9	69.4	0.3	0.5	-0.0	-2.9
Nevada	67.9	70.7	72.7	67.2	67.4	67.7	0.2	0.3	-1.6	0.4
Pacific	69.7	71.4	71.0	66.2	65.6	66.0	0.1	-0.1	-1.4	-0.2
Washington	67.5	63.4	69.7	67.7	66.2	65.9	-0.3	1.0	-0.6	-1.3
Oregon	71.2	65.8	69.3	66.6	66.4	66.8	-0.4	0.5	-0.8	0.2
California	69.9	74.3	71.3	66.0	65.4	65.8	0.3	-0.4	-1.5	-0.2
Alaska	...	53.8	59.1	63.3	59.1	59.5	...	0.9	1.4	-3.0
Hawaii	...	61.5	75.7	68.1	68.3	72.7	...	2.1	-2.1	3.3

[1] 1940 data are estimated based on published figures.
[2] 1960 includes hospital units of institutions.

NOTE: Community hospitals include all non-Federal short-stay hospitals classified by the American Hospital Association to one of the following services: general medical and surgical; obstetrics and gynecology; eye, ear, nose, and throat; rehabilitation; orthopedic; other specialty; children's general; children's eye, ear, nose, and throat; children's rehabilitation; children's orthopedic; and children's other specialty.

SOURCES: American Medical Association: Hospital service in the United States. JAMA 116(11): 1055-1144, 1941. (Copyright 1941: Used with the permission of the American Medical Association.); American Hospital Association: Hospitals. JAHA 35(15): 383-430, Aug. 1, 1961. (Copyright 1961: Used with the permission of the American Hospital Association.); Division of Health Manpower and Facilities Statistics, National Center for Health Statistics: Data from the Master Facility Inventory.

Table 59. Full-time equivalent employees per 100 average daily patients in community hospitals and average annual rate of change, according to geographic division and State: United States, selected years 1960–77

(Data are based on reporting by facilities)

Geographic division and State	Year					Period		
	1960[1]	1970	1975	1976	1977	1960-70[1]	1970-75	1975-77
	Number of employees per 100 average daily patients					Average annual rate of change		
United States	226	302	349	358	369	2.9	2.9	2.8
New England	249	351	412	424	432	3.5	3.3	2.4
Maine	227	289	359	379	401	2.4	4.4	5.7
New Hampshire	240	310	347	356	375	2.6	2.3	4.0
Vermont	227	318	346	339	332	3.4	1.7	-2.0
Massachusetts	252	365	436	449	453	3.8	3.6	1.9
Rhode Island	270	383	433	449	460	3.6	2.5	3.1
Connecticut	247	347	397	408	421	3.5	2.7	3.0
Middle Atlantic	225	311	352	349	362	3.3	2.5	1.4
New York	233	336	375	363	375	3.7	2.2	0.0
New Jersey	225	278	308	313	320	2.1	2.1	1.9
Pennsylvania	214	287	340	347	364	3.0	3.4	3.5
East North Central	226	299	343	355	368	2.8	2.8	3.6
Ohio	232	302	334	344	360	2.7	2.0	3.8
Indiana	216	280	320	331	346	2.6	2.7	4.0
Illinois	226	301	357	373	379	2.9	3.5	3.1
Michigan	239	313	364	373	386	2.7	3.1	3.0
Wisconsin	199	277	315	326	350	3.4	2.6	5.4
West North Central	212	273	305	320	332	2.6	2.2	4.3
Minnesota	220	273	296	311	325	2.2	1.6	4.8
Iowa	208	258	293	313	325	2.2	2.6	5.3
Missouri	217	289	326	341	353	2.9	2.4	4.1
North Dakota	177	254	273	281	292	3.7	1.5	3.4
South Dakota	188	247	294	303	306	2.8	3.5	2.0
Nebraska	220	276	298	307	315	2.3	1.5	2.8
Kansas	210	270	313	328	338	2.5	3.0	3.9
South Atlantic	217	295	343	350	358	3.1	3.1	2.2
Delaware	243	328	390	390	394	3.0	3.5	0.5
Maryland	237	354	391	383	387	4.1	2.0	-0.5
District of Columbia	240	363	443	464	494	4.2	4.1	5.6
Virginia	193	289	323	325	326	4.1	2.2	0.5
West Virginia	198	255	298	303	321	2.6	3.2	3.8
North Carolina	196	277	319	325	340	3.5	2.9	3.2
South Carolina	185	257	302	324	330	3.3	3.3	4.5
Georgia	233	294	364	373	381	2.4	4.4	2.3
Florida	245	295	346	354	361	1.9	3.2	2.1
East South Central	227	275	306	314	321	1.9	2.2	2.4
Kentucky	229	276	292	298	304	1.9	1.1	2.0
Tennessee	231	284	315	321	330	2.1	2.1	2.4
Alabama	233	266	308	319	328	1.3	3.0	3.2
Mississippi	207	270	300	314	315	2.7	2.1	2.5

See footnote at end of table.

Table 59. Full-time equivalent employees per 100 average daily patients in community hospitals and average annual rate of change, according to geographic division and State: United States, selected years 1960–77—Continued

(Data are based on reporting by facilities)

Geographic division and State	Year					Period		
	1960[1]	1970	1975	1976	1977	1960–70[1]	1970–75	1975–77
	Number of employees per 100 average daily patients					Average annual rate of change		
West South Central	225	297	346	353	364	2.8	3.1	2.6
Arkansas	209	274	318	320	332	2.7	3.0	2.2
Louisiana	218	292	354	356	363	3.0	3.9	1.3
Oklahoma	218	296	359	375	383	3.1	3.9	3.3
Texas	232	304	346	353	367	2.7	2.6	3.0
Mountain	226	299	364	381	392	2.8	4.0	3.8
Montana	216	247	301	323	342	1.4	4.0	6.6
Idaho	255	281	321	343	343	1.0	2.7	3.4
Wyoming	217	251	344	350	397	1.5	6.5	7.4
Colorado	221	306	373	391	383	3.3	4.0	1.3
New Mexico	228	314	389	409	455	3.3	4.4	8.2
Arizona	222	327	381	390	406	3.9	3.1	3.2
Utah	243	304	388	406	422	2.3	5.0	4.3
Nevada	224	284	344	363	380	2.4	3.9	5.1
Pacific	243	327	401	418	435	3.0	4.2	4.2
Washington	263	313	382	400	414	1.8	4.1	4.1
Oregon	232	303	387	384	393	2.7	5.0	0.8
California	241	334	407	425	445	3.3	4.0	4.6
Alaska	220	301	385	458	445	3.2	5.0	7.5
Hawaii	226	278	357	411	375	2.1	5.1	2.5

[1] 1960 includes hospital units of institutions. Excludes students, interns, and residents.

NOTE: Community hospitals include all non-Federal short-stay hospitals classified by the American Hospital Association to one of the following services: general medical and surgical; obstetrics and gynecology; eye, ear, nose, and throat; rehabilitation; orthopedic; other specialty; children's general; children's eye, ear, nose, and throat; children's rehabilitation; children's orthopedic; and children's other specialty.

SOURCES: American Hospital Association: Hospitals. JAHA 35(15): 383-430, Aug. 1, 1961. (Copyright 1961: Used with the permission of the American Hospital Association.); Division of Health Manpower and Facilities Statistics, National Center for Health Statistics: Data from the Master Facility Inventory.

Table 60. Outpatient visits per 1,000 patient days in community hospitals and average annual rate of change, according to geographic division and State: United States, selected years 1970–77

(Data are based on reporting by facilities)

Geographic division and State	Year				Period	
	1970	1975	1976	1977	1970-75	1975-77
	Outpatient visits per 1,000 patient days				Average annual rate of change	
United States	568	738	769	760	5.4	1.5
New England	676	955	1,022	1,006	7.2	2.6
Maine	596	940	982	1,129	9.5	9.6
New Hampshire	811	1,070	1,158	1,183	5.7	5.1
Vermont	596	954	858	957	9.9	0.2
Massachusetts	704	940	1,005	1,005	6.0	3.4
Rhode Island	620	845	836	816	6.4	-1.7
Connecticut	640	1,006	1,137	979	9.5	-1.4
Middle Atlantic	647	906	929	901	7.0	-0.3
New York	658	896	914	922	6.4	1.4
New Jersey	517	706	748	666	6.4	-2.9
Pennsylvania	691	1,034	1,054	1,001	8.4	-1.6
East North Central	513	732	779	756	7.4	1.6
Ohio	502	670	723	700	5.9	2.2
Indiana	484	741	804	787	8.9	3.1
Illinois	531	735	752	738	6.7	0.2
Michigan	588	885	985	905	8.5	1.1
Wisconsin	381	573	572	623	8.5	4.3
West North Central	373	499	532	543	6.0	4.3
Minnesota	309	387	432	443	4.6	7.0
Iowa	348	525	597	609	8.6	7.7
Missouri	468	573	591	577	4.1	0.3
North Dakota	150	211	237	279	7.1	15.0
South Dakota	314	308	332	432	-0.4	18.4
Nebraska	264	401	434	456	8.7	6.6
Kansas	494	724	720	743	7.9	1.3
South Atlantic	547	697	690	675	5.0	-1.6
Delaware	674	1,036	974	965	9.0	-3.5
Maryland	809	991	937	934	4.1	-2.9
District of Columbia	749	924	944	898	4.3	-1.4
Virginia	557	662	655	612	4.1	-5.3
West Virginia	635	792	795	759	4.5	-2.1
North Carolina	509	664	708	714	5.5	3.7
South Carolina	456	608	663	670	5.9	5.0
Georgia	489	679	724	704	6.8	1.8
Florida	442	570	514	509	5.2	-5.5
East South Central	401	498	520	514	4.4	1.6
Kentucky	448	558	587	560	4.5	0.2
Tennessee	441	526	534	518	3.6	-0.8
Alabama	344	422	472	506	4.2	9.5
Mississippi	349	475	475	458	6.4	-1.8

See footnotes at end of table.

Table 60. Outpatient visits per 1,000 patient days in community hospitals and average annual rate of change, according to geographic division and State: United States, selected years 1970–77—Continued

(Data are based on reporting by facilities)

Geographic division and State	Year				Period	
	1970	1975	1976	1977	1970–75	1975–77
	Outpatient visits per 1,000 patient days				Average annual rate of change	
West South Central	442	528	573	584	3.6	5.2
Arkansas	306	432	441	464	7.1	3.6
Louisiana	693	756	874	908	1.8	9.6
Oklahoma	292	397	471	467	6.3	8.5
Texas	421	502	525	528	3.6	2.6
Mountain	525	781	911	912	8.3	8.1
Montana	337	538	595	607	9.8	6.2
Idaho	514	748	865	787	7.8	2.6
Wyoming	342	670	668	831	14.4	11.4
Colorado	532	856	918	888	10.0	1.9
New Mexico	435	690	973	1,067	9.7	24.4
Arizona	648	780	907	865	3.8	5.3
Utah	677	1,015	1,375	1,400	8.4	17.4
Nevada	395	633	691	811	9.9	13.2
Pacific	923	935	952	987	0.3	2.7
Washington	538	816	900	982	8.7	9.7
Oregon	612	773	809	869	4.8	6.0
California	1,006	954	966	979	-1.1	1.3
Alaska	747	1,388	999	876	13.2	-20.6
Hawaii	1,230	1,324	1,229	1,670	1.5	12.3

NOTE: Community hospitals include all non-Federal short-stay hospitals classified by the American Hospital Association to one of the following services: general medical and surgical; obstetrics and gynecology; eye, ear, nose, and throat; rehabilitation; orthopedic; other specialty; children's general; children's eye, ear, nose, and throat; children's rehabilitation; children's orthopedic; and children's other specialty.

SOURCE: Division of Health Manpower and Facilities Statistics, National Center for Health Statistics: Data from the Master Facility Inventory.

Table 61. Long-stay hospitals and beds, according to type of hospital and ownership: United States, 1972 and 1977

(Data are based on reporting by facilities)

Year and type of ownership	All long-stay hospitals	Type of hospital					
		General	Psychiatric	Tuberculosis	Rehabilitation	Chronic disease	Other
1972				Number of hospitals			
All ownerships	757	51	404	75	56	75	96
Government	523	47	306	70	11	48	41
Federal	65	33	29	-	-	-	3
State-local	458	14	277	70	11	48	38
Proprietary	66	3	50	-	2	7	4
Nonprofit	168	1	48	5	43	20	51
1977							
All ownerships	597	34	360	17	52	59	75
Government	383	26	256	16	13	40	32
Federal	42	15	24	-	-	-	3
State-local	341	11	232	16	13	40	29
Proprietary	72	3	54	-	-	3	7
Nonprofit	142	5	50	1	34	16	36
1972				Number of beds			
All ownerships	461,598	30,861	363,203	12,351	6,994	23,724	24,465
Government	435,226	30,428	353,611	12,011	3,206	19,781	16,189
Federal	60,220	26,501	32,093	-	-	-	1,626
State-local	375,006	3,927	321,518	12,011	3,206	19,781	14,563
Proprietary	5,935	371	4,391	-	361	546	266
Nonprofit	20,437	62	5,201	340	3,427	3,397	8,010
1977							
All ownerships	277,278	14,925	214,056	3,112	6,285	20,003	18,897
Government	252,557	14,068	203,553	3,013	2,537	16,725	12,661
Federal	36,770	11,683	23,540	-	-	-	1,547
State-local	215,787	2,385	180,013	3,013	2,537	16,725	11,114
Proprietary	6,639	260	4,922	-	666	288	503
Nonprofit	18,082	597	5,581	99	3,082	2,990	5,733

SOURCE: Division of Health Manpower and Facilities Statistics, National Center for Health Statistics: Data from the Master Facility Inventory.

Table 62. Nursing homes and beds, according to selected characteristics: United States, 1973–74 and 1977

(Data are based on a sample survey of nursing homes)

Characteristic	Nursing homes				Nursing home beds			
	1973-74[1]		1977		1973-74[1]		1977	
	Number	Percent distribution	Number	Percent distribution	Number	Percent distribution	Number	Percent distribution
Total	15,700	100.0	18,900	100.0	1,177,300	100.0	1,402,400	100.0
Ownership								
Proprietary	11,900	75.4	14,500	76.8	832,300	70.7	971,200	69.3
Nonprofit and government	3,900	24.6	4,400	23.2	345,000	29.3	431,200	30.8
Certification[2]								
Skilled nursing facility	5,300	33.5	3,600	19.2	471,900	40.1	294,000	21.0
Skilled nursing and intermediate care facility	2,400	15.4	4,600	24.2	291,600	24.8	549,400	39.2
Intermediate care facility	4,400	28.1	6,000	31.6	253,200	21.5	391,600	27.9
Not certified	3,600	23.1	4,700	25.0	160,600	13.6	167,400	11.9
Bed size								
Less than 50 beds	6,400	40.8	8,000	42.3	178,800	15.2	182,900	13.0
50-99 beds	5,500	35.0	5,800	30.8	392,500	33.3	417,800	29.8
100-199 beds	3,200	20.4	4,200	22.3	417,900	35.5	546,400	39.0
200 beds or more	600	3.8	900	4.6	188,000	16.0	255,400	18.2
Geographic region								
Northeast	3,100	19.8	3,900	20.5	250,800	21.3	314,900	22.5
North Central	5,600	35.7	5,900	31.1	408,800	34.7	483,900	34.5
South	4,100	26.1	4,900	26.0	303,700	25.8	381,500	27.2
West	2,900	18.5	4,200	22.4	214,100	18.2	222,100	15.8

[1] Excludes personal care and domiciliary care homes.
[2] Medicare extended care facilities and Medicaid skilled nursing homes from the 1973–74 survey were considered to be equivalent to Medicare or Medicaid skilled nursing facilities in 1977 for the purposes of this comparison.

NOTE: Numbers are rounded to the nearest hundred. Percents are calculated on the basis of unrounded figures.

SOURCE: Division of Health Resources Utilization Statistics, National Center for Health Statistics: Data from the National Nursing Home Survey.

Table 63. Nursing home beds per 1,000 resident population 65 years of age and over, according to type of home, geographic division, and State: United States, 1971 and 1976

(Data are based on reporting by facilities)

Geographic division and State	1971			1976		
	Total	Nursing care	Personal care and other[1]	Total	Nursing care	Personal care and other[1]
	Beds per 1,000 resident population					
United States	58.6	44.8	13.9	61.7	51.2	10.5
New England	73.3	58.4	14.9	74.0	57.3	16.7
Maine	63.7	46.6	17.2	71.0	51.7	19.3
New Hampshire	68.3	57.4	10.9	70.1	63.2	6.9
Vermont[2]	62.7	47.1	15.6	96.8	55.9	40.9
Massachusetts[2]	77.8	61.5	16.2	75.0	57.4	17.7
Rhode Island[2]	62.0	45.7	16.3	63.2	50.9	12.3
Connecticut	74.5	62.8	11.7	74.2	60.1	14.2
Middle Atlantic	42.8	31.3	11.6	47.1	38.0	9.2
New York	41.3	29.5	11.8	50.7	37.7	13.0
New Jersey	43.5	31.7	11.8	43.1	36.0	7.1
Pennsylvania[2]	44.8	33.8	11.1	44.1	39.4	4.7
East North Central	62.2	47.9	14.3	74.5	63.2	11.3
Ohio	59.0	46.5	12.5	59.5	53.4	6.1
Indiana	65.1	51.3	13.8	69.3	59.9	9.4
Illinois	60.7	40.3	20.4	75.2	63.2	12.0
Michigan[2]	56.7	48.2	8.4	80.1	61.0	19.1
Wisconsin[2]	78.4	64.5	13.9	100.5	90.4	10.2
West North Central	81.1	58.2	22.9	83.2	70.2	13.0
Minnesota[2]	99.4	76.3	23.0	96.3	81.6	14.7
Iowa	96.0	63.5	32.5	91.8	73.7	18.1
Missouri[2]	56.4	44.3	12.1	55.2	46.5	8.7
North Dakota	91.1	56.3	34.8	91.7	70.0	21.7
South Dakota	85.9	60.0	25.9	97.5	72.1	25.4
Nebraska[2]	81.6	58.2	23.4	118.5	109.7	8.8
Kansas	81.0	52.5	28.5	80.3	70.7	9.6
South Atlantic	40.5	30.5	10.0	40.8	32.8	8.0
Delaware	41.7	28.9	12.8	42.8	36.5	6.3
Maryland	47.5	42.1	5.4	54.7	48.1	6.7
District of Columbia	39.6	29.1	10.5	40.5	31.8	8.7
Virginia[2]	41.3	27.2	14.1	57.8	38.1	19.7
West Virginia	19.6	12.7	6.8	26.0	20.5	5.5
North Carolina[2]	44.8	19.4	25.4	48.1	25.8	22.3
South Carolina	37.8	32.6	5.2	36.4	34.1	2.3
Georgia	60.2	54.0	6.2	66.5	65.4	1.1
Florida	33.8	27.4	6.4	23.9	21.0	2.9
East South Central	41.0	29.8	11.1	47.2	39.7	7.5
Kentucky	54.1	26.3	27.8	56.0	37.4	18.6
Tennessee[2]	36.2	28.0	8.3	44.4	40.6	3.8
Alabama	39.9	37.2	2.6	50.4	45.7	4.7
Mississippi	31.1	27.5	3.5	34.8	32.8	2.0

See footnotes at end of table.

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Table 63. Nursing home beds per 1,000 resident population 65 years of age and over, according to type of home, geographic division, and State: United States, 1971 and 1976—Continued

(Data are based on reporting by facilities)

Geographic division and State	1971			1976		
	Total	Nursing care	Personal care and other[1]	Total	Nursing care	Personal care and other[1]
	Beds per 1,000 resident population					
West South Central	67.3	60.1	7.2	77.4	70.0	7.5
Arkansas	61.4	57.6	3.8	71.2	67.3	3.9
Louisiana	46.4	43.6	2.8	53.9	51.3	2.6
Oklahoma	87.6	79.6	8.0	78.2	74.4	3.7
Texas[2]	69.0	59.9	9.1	85.6	74.7	10.9
Mountain	56.9	45.2	11.7	57.0	50.2	6.8
Montana	63.7	48.1	15.6	69.3	61.4	7.9
Idaho[2]	55.9	51.0	4.9	59.5	49.1	10.4
Wyoming	54.7	43.8	10.9	56.6	45.5	11.1
Colorado[2]	85.2	70.0	15.2	104.3	94.2	10.1
New Mexico	44.6	30.5	14.1	35.8	28.8	7.0
Arizona[2]	30.0	26.2	3.8	25.0	23.0	2.0
Utah	59.6	39.2	20.5	48.6	42.3	6.2
Nevada	43.7	31.3	12.4	34.9	29.1	5.7
Pacific	79.1	57.9	21.3	67.0	52.3	14.7
Washington	86.6	69.9	16.7	80.9	71.1	9.8
Oregon	73.7	55.3	18.4	64.4	52.4	12.0
California	79.2	56.6	22.6	65.1	49.2	16.0
Alaska	93.3	68.3	25.0	86.9	76.7	10.2
Hawaii	48.7	34.9	13.8	53.1	42.1	11.1

[1] Includes personal care homes with nursing, personal care homes without nursing, and domiciliary care homes.
[2] The change from Federal to State data collection in these States may have introduced changes in data collection procedures coverage, definitions, and concepts between 1973 and 1976.

SOURCES: Division of Health Resources Utilization Statistics, National Center for Health Statistics: Unpublished data from the Master Facility Inventory; U.S. Bureau of the Census: Population estimates and projections. Current Population Reports, Series P-25, No. 734. Washington. U.S. Government Printing Office, Nov. 1978.

SECTION IV

Health Care Expenditures[a]

A. National health expenditures

National health expenditures are compiled and published on a yearly basis by the Health Care Financing Administration (HCFA). They include the sum of expenditures for personal health care, prepayment and administration, Government public health activities, and research and medical facilities construction. They exclude expenditures for education and training of physicians and other health workers and nonmedical activities generally related to industrial and environmental health hazards such as pollution control and occupational safety.

In 1978, health expenditures in the United States totaled $192.4 billion, an average of $863 per person. During the 1970's, national health expenditures have more than doubled with an average annual increase of 12.6 percent. Price controls, imposed during the Economic Stabilization Program, were briefly successful in holding down health care spending. The controls were lifted in 1974, however, and an increase in expenditures of 13.8 percent followed for 1974–75. In 1978, the trend of rapidly rising health expenditures continued with an annual increase of 13.2 percent.

The Nation's total health care bill continues to represent a growing proportion of the gross national product (GNP). The greatest increases in this proportion occurred between 1973 and 1975 when growth in the GNP slowed to about 8 percent per year. For this same period, national health expenditures increased by more than 13 percent per year and, consequently, from 7.8 percent of the GNP to 8.6 percent. During the past three decades, the GNP increased from $284.8 billion in 1950 to $2.1 trillion in 1978, representing an average annual increase of 7.4 percent. During this period, health care expenditures increased at an average annual rate of 10.2 percent, comprising 9.1 percent of the GNP in 1978, compared with only 4.5 percent in 1950. Moreover, per capita expenditures for 1978 were more than 10 times the level for 1950, increasing from $82 to $863 per person.

The level of health care spending is determined by the quantities of various purchased services and the price of each service. Quantities change as a result of changes in the size and characteristics of the population and in the utilization patterns of various population groups. Rapid increases in health care prices, however, have been the primary force behind the huge growth in health expenditures.

Between 1969 and 1978, personal health care expenditures (the largest component of national health care expenditures) increased from $57.9 billion to $167.9 billion—an average increase of 12.6 percent per year. It is estimated that 63 percent of this growth was due to price increases. The impact of inflation has been even more pronounced for the latter half of this period. Health expenditures increased rapidly immediately following the end of the Economic Stabilization Program in 1974—15.3 percent for the 1974–75 period. Price change accounted for 80 percent of this increase; and for 1977–78, 68 percent of the growth in personal health care expenditures was attributed to price.

Increased utilization and changes in the health care product accounted for 25 percent of the increase in health expenditures for 1977–78. Rising incomes lead to greater consumption of health care, although this relationship has diminished because of the increase of third-party payment mechanisms. Private insurance defrays the direct cost of health care to the consumer—encouraging increased utilization and demand for higher quality of care. Government programs, such as Medicare and Medicaid, provide health care to the elderly and the poor—both previously underserved groups. In addition, utilization increases with age, and the elderly are a growing proportion of the population.

Technological advances in health care have contributed significantly to cost increases. Sophisticated treatment processes such as intensive care units, radiation therapy, and renal dialysis are expensive. In addition, they generally require more highly skilled medical personnel, further increasing the cost.

In discussing increases in health care costs, it is useful to compare them with increasing costs in other sectors. The Consumer Price Index (CPI), compiled by the Bureau of Labor Statistics, U.S. Department of Labor, is the major source of information regarding price changes in the American economy. It is designed to measure the change in

[a] Prepared by Barbara G. Weichert, Division of Analysis, National Center for Health Statistics.

prices of a given "market basket" of goods and services that represents the purchases of urban wage earners and clerical workers. (Beginning in 1978, an index for *all* urban consumers has also been published each month; for continuity, the present report employs the index for urban wage earners and clerical workers.) The CPI is intended to measure changes in price for goods and services of a constant quality. Despite the highly detailed specifications of the products and services that are priced, barely discernible changes in quality can distort the measure of price change. For instance, the charges for very specifically defined diagnostic X-ray procedures in hospitals enter the calculation of the Consumer Price Index. Quality changes are controlled through monitoring of the number and types of personnel involved and various related factors. Technological advances, involving improvements in equipment or technique, might result in a reduction of potentially deleterious exposure to ionizing radiation or in greater diagnostic accuracy. Whether or not these improvements in quality resulted in increased charges for the procedure, the index would be spuriously inflated as a result of a quality improvement for which no compensatory adjustment was made. Deteriorating quality of goods or services leads to underestimates of the price rise. It is not clear during which periods the CPI has overstated price increases and during which periods it has understated them.

Historically, increases in the medical care component have outpaced those for the total index (all items). Hospital charges and physician fees have contributed most to the increases in the medical care component, while dentist fees have increased at rates similar to the overall CPI. Between 1950 and 1978, the price of medical care more than quadrupled, increasing at an average annual rate of 5.2 percent. For the same time period, the overall CPI rose slightly more than 2.5 times, increasing at an average annual rate of 3.6 percent. The major portion of the increase in medical care prices has occurred since 1965; from 1950 to 1965, the average annual increase was 3.5 percent, compared with 7.1 percent from 1965 to 1978. Medical care price increases have also added to the increase in the total index. For all time periods measured, the average annual percent change for the total CPI is greater than the CPI less medical care—an indication of the impact of medical care prices on inflation.

After the wage and price controls imposed by the Economic Stabilization Program (August 1971-April 1974) were lifted, medical care prices began increasing rapidly. From 1977 to 1978, however, this growth in medical care prices has slowed, while the rate of increase for the overall CPI accelerated in 1978. This has narrowed the gap between increases in the total index and the medical care component.

When compared with other major components of the CPI (food, clothing, housing, and transportation), medical care prices, with a few exceptions, outpace other increases. The medical care index has increased at an average annual rate of 5.2 percent since 1950—substantially greater than the corresponding increases for other components. Moreover, compared with the fluctuations for other components, the rate of increase for medical care prices accelerated steadily from 1950 to 1977. However, the most recent data suggest a decline in the rate of increase—from 9.6 percent for 1976-77 to 8.4 percent for 1977-78.

B. Sources and types of payment

Funds for health care expenditures are derived from both private and public sources. Private expenditures are those paid directly by consumers, by private health insurance carriers, and by industry and philanthropic organizations. Public expenditures are those made by Federal, State, and local governments and include: Medicare and Medicaid, which pay for health care services provided to the aged, disabled, and poor; programs that provide services directly to specified beneficiaries such as veterans, members of the armed services, and crippled children; and workmen's compensation benefits, which are required by legislation but underwritten by private insurance carriers.

When the Medicare and Medicaid programs went into effect in 1966, public spending began to grow rapidly. In 1978, public per capita expenditures were $350.40, 6.5 times the pre-Medicare-Medicaid level of $54.13 in 1965. With an average annual increase of 16.5 percent, total public expenditures have increased 1.6 times as fast as private expenditures. Moreover, while public funds accounted for one-fourth of all health expenditures in 1965, they accounted for 40.6 percent in 1978. Conversely, private funds paid 75.1 percent of the total health care bill in 1965 and 59.4 percent in 1978.

Since 1965, increases in public spending for health care have not occurred at a constant rate. From 1965 to 1970, the average annual increase in public expenditures was 20.6 percent, an increase that can be largely attributed to the enactment of the Medicare and Medicaid programs. The rate of increase then subsided until 1974 when it increased sharply to 20.1 percent. Reasons for this sudden increase include the rapid inflation following the lifting of price controls in 1974 and the expansion of the Medicare and Medicaid programs. In addition, an administrative change in the method of payment for hospital services covered by the Medicare program substantially increased expenditures for fiscal year 1975. Since 1975, the growth of public financing for health care has stabilized and is comparable to financing by the private sector with average annual increases of 12.7 percent and 13.5 percent, respectively, for 1977-78.

Third-party payments (i.e., all health care payments not paid directly by the consumer) continue to account for an increasing proportion of personal health care expenditures—67.1 percent in 1978. Public sources paid 38.7 percent of the Nation's health care bill in 1978, with the Federal Government responsible for a much larger share than State and local governments. Moreover, there has been considerable growth in Federal third-party payments—from 2.7 percent of total expenditures in 1929 to 27.7 percent in 1978. On the other hand, State and local

contributions have remained fairly constant, at about 12 percent, since the mid-1930's.

Within the private sector, the major portion of third-party payments is made by private health insurance carriers. These payments have shown substantial growth since 1950, increasing from 9.1 percent of the total health expenditures to 27.0 percent by 1978. Philanthropy and industry contribute a much smaller proportion, ranging from 2.9 percent in 1950 to 1.3 percent in 1978.

Hospital care expenditures, traditionally claiming the largest share of the health care dollar, have increased from 30.4 percent of the total expenditures in 1950 to 39.5 percent in 1978. In dollar amounts, hospital care expenditures totaled $3.9 billion in 1950 and $76 billion in 1978, an average annual increase of 11.2 percent. Changes in medical technology, which apply most directly to hospital care, account for a substantial portion of this increase. Other contributory factors include price inflation and increased utilization. Nursing home care, another component of institutional care, has also claimed an increasing share of health expenditures—from 1.5 percent in 1950 to 8.2 percent in 1978. In absolute terms, expenditures for nursing home care increased from $187 million in 1950 to $15.8 billion in 1978, an average annual rate of 17.2 percent.

In 1978, $35.3 billion were spent on physician services, compared with $2.7 billion in 1950, an average annual increase of 9.5 percent. Although the absolute amount has shown a substantial increase, the proportion spent has actually decreased slightly from 21.7 percent of all health expenditures in 1950 to 18.3 percent in 1978.

The expenditures for physician services, however, understate the physician's impact on total health care spending. Physicians are the primary influence regarding decisions on hospitalization—which patients are admitted, what type of care is received, and what is the length of stay—and resulting costs. Moreover, they have a decided influence on prescription drug expenditures.

Expenditures for dental care amounted to $13.3 billion in 1978, an average annual increase of 9.7 percent over the $1.0 billion spent in 1950. As with physician services, expenditures for dental services have increased substantially in absolute amounts while decreasing slightly as a proportion of total expenditures (from 7.6 percent in 1950 to 6.9 percent in 1978).

Other major expenditures include drugs and drug sundries, administration of health insurance plans, and health related research and construction. In 1978, these categories accounted for 7.9 percent, 5.2 percent, and 4.9 percent, respectively, of all health expenditures.

C. Institutional care

In 1977, adjusted expenses per inpatient day for hospital care were $173.25, representing an increase of 13.8 percent for 1976–77. These costs, faced by the hospital to provide 1 inpatient day of care, have been increasing rather steadily since 1965, with an average annual increase of 12.9 percent for the period 1965–77. The slower growth rates of 7.6 percent for 1972–73 and 11.2 percent for 1973–74 reflect the wage and price controls imposed under the Economic Stabilization Program; the acceleration to 17.6 percent for 1974–75 reflects the lifting of these controls.

Payroll expenses accounted for 50.3 percent of the total hospital expenses in 1977. Since 1965, they have been decreasing as a proportion of total hospital expenses but increasing in dollar amounts at an average annual rate of 11.0 percent for the period 1965–77. At the same time, hospital full-time equivalent personnel have increased from 1.4 million, or 224 per 100 average daily patients, to 2.6 million, or 315 per 100 average daily patients. In addition to the increase in hospital personnel, higher wage rates, upgrading in the skills of hospital workers, and the shortening of the hospital work week have contributed to increasing payroll costs.

Nonpayroll expenses for purchased goods and services, new equipment, and overhead increased 16.9 percent for 1976–77. Since 1965, these expenses have increased at an average annual rate of 15.3 percent, somewhat greater than the rate for payroll expenses.

Several factors have contributed to the rapid increases in hospital expenses. For most of the period since 1960, the increasing unit costs of hospital inputs (i.e., wage rates and the prices of purchased goods and services) have been responsible for somewhat more than half of the total increase in cost per patient day. The expenses associated with improvement and expansion of services accounted for the remainder.

For 1978, this pattern is even more pronounced. Increases in wages and prices accounted for 67.8 percent of the total increase in hospital expenses, and expansion of services accounted for only 32.2 percent. This deceleration of the growth in hospital services may be an attempt, on the part of hospitals, at voluntary cost containment in view of proposed legislation for mandatory hospital cost containment.

Nursing home care expenditures also showed substantial increases. The average total monthly charge for nursing home care rose from $186 in 1964 to $689 in 1977–an average annual increase of 10.6 percent. The rate of increase was slightly greater from 1964 to 1973–74, at 10.5 percent per year, than from 1973–74 to 1977, at 9.5 percent per year.

Average monthly charges for nursing homes vary according to the level of nursing care provided. For example, nursing care homes have higher monthly charges than personal care homes, with or without nursing care ($719 and $514, respectively, for 1977). Larger nursing homes are more likely to provide skilled nursing care, and average total monthly charges bear a direct relationship to facility size. In 1977, facilities with less than 50 beds charged an average of $546 per month; facilities with 50–99 beds, $643; facilities with 100–199 beds, $706; and facilities with 200 or more beds charged $837.

Monthly charges also vary according to the type of care received by residents. In 1977, nursing home residents receiving intensive nursing care were charged an average of $758 per month in contrast to those receiving personal care

who were charged $586 per month. Also, as the need for intensive nursing care increases with age, so does the average monthly charge. In 1977, these charges ranged from $585 per month for people under 65 years of age to $719 per month for people 85 years of age or over.

D. Major population dimensions

Changes in population size and composition have a direct impact on a nation's expenditures for health care. While population growth in the United States figured prominently during the postwar era, it has slowed considerably in recent years—from an average annual increase of 1.6 percent per year for 1950–65 to 0.9 percent per year for 1965–77. Consequently, population growth accounted for 21.1 percent of the increase in health care expenditures for 1950–65, but only 6.4 percent for the 1965–77 period.

Currently, the changing age distribution, specifically the increasing proportion of people over 65 years of age, is having an effect on health expenditures. In 1950, 12.3 million people in the United States, or 8.1 percent of the total population, were over 65 years of age. By 1960, this group had grown to 16.6 million people or 9.2 percent of the population; and by 1970, 20.1 million or 9.9 percent. The number reached 23.5 million in 1977, an increase of 91.1 percent from 1950, and this figure represented 10.9 percent of the total population. It is projected that the number of people over 65 years of age will be 31.8 million by the year 2000—12.2 percent of the total population and a 157-percent increase in 50 years.

Health care costs for this group are higher than those for the younger population. In fiscal year 1977, per capita personal health care expenditures for people over 65 years of age were $1,745.17, or 3.4 times the per capita expenditures of $514.25 for those under 65 years of age. Therefore, the elderly account for 28.9 percent of the total expenditures, although they comprise only 11 percent of the population.

The difference between the two age groups generally reflects the more serious nature of illness and greater prevalence of chronic conditions among older people. They are hospitalized more frequently and experience longer lengths of stay than younger people. For example, in 1977 the hospital discharge rate for people under 65 years of age was 145.1 per 1,000 population with an average length of stay of 6.2 days. The hospital discharge rate for the elderly was 374.4 per 1,000 population with an average length of stay of 11.1 days.

Source of payment also varies between age groups and has changed over time as well. Third-party payments have been assuming an increasing share of health care expenditures—from 46.8 percent in 1966 to 73.5 percent in 1977 for the elderly and from 48.9 percent to 68.1 percent for those under 65 years of age. Both private and public health insurance have expanded steadily for the younger population. Private health insurance accounted for more than half of the third-party payments for people under 65 years of age in 1977. In contrast, less than 10 percent of third-party payments for the elderly population's health care was covered by private health insurance.

By far the greatest portion of the elderly population's health care bill is paid by the Medicare program. This share was 44.3 percent in 1977. The Medicare program, Title XVIII of the Social Security Act, went into effect on July 1, 1966. Federally funded, it was designed to provide basic health insurance coverage for people 65 years of age and over, thereby reducing the financial burden for a population characterized by low income and increased prevalence of chronic disease and disability.

Of the more than $18 billion spent by Medicare on behalf of the elderly in 1977, 74.0 percent was spent for hospital care and 21.7 percent for physicians' services. Expenditures for nursing home care amounted to 1.9 percent of the total, and other services, which include home health services, 2.3 percent. Drugs, eyeglasses, and dental care are not covered by Medicare.

The Medicare program has grown dramatically since 1967, with total expenditures increasing almost sixfold. Following the early years of the program, the proportions spent for hospital care and physicians' services remained fairly stable. Nursing home care expenditures showed considerable fluctuation for the first several years of the program, but have stabilized since 1972. The nursing home care covered by Medicare is restricted to daily skilled nursing or rehabilitation services that follow a hospital stay and are provided in a skilled nursing facility. The initial difficulty in enforcing this provision and its more rigorous application in subsequent years account for the early fluctuations in expenditures. Moreover, there has been a shift toward increased use of home health services, further reducing the proportion spent for skilled nursing facility care.

Another amendment to the Social Security Act, Title XIX-Medicaid, went into effect January 1, 1966. Medicaid, a federally assisted program operated by the States under Federal guidelines, provides medical services and improves access to medical care for certain low-income populations. Recipients of cash assistance programs are categorically eligible. This includes people receiving Supplemental Security Income (SSI) and Aid to Families with Dependent Children (AFDC). In addition, some States allow coverage for people who are not eligible for cash assistance but who are deemed medically indigent by virtue of high medical expenses. While Federal and State Governments jointly finance the program, each State determines benefits, eligibility criteria, and rates of payment.

For fiscal year 1977, 23.9 million people received medical assistance through the Medicaid program. By basis of eligibility, 15.5 percent were 65 years of age and over, 0.4 percent were blind, 11.9 percent were disabled, 64.2 percent were members of families with dependent children, and 8.0 percent were other recipients.

Like the Medicare program, Medicaid has greatly expanded during the past decade. Expenditures have increased sevenfold—from $2.3 billion in fiscal year 1967 to $16.3 billion in fiscal year 1977. The proportions spent on inpatient hospital care and nursing home care have decreased substantially since 1967, from 40.2 percent to

31.5 percent and from 33.7 percent to 17.2 percent, respectively. (It should be noted, however, that there have been sizable increases in absolute expenditures.) Conversely, the proportion spent on intermediate care facilities has shown a marked increase, from 2.2 percent in 1969 to 22.0 percent in 1977. Medicaid expenditures for physicians' services represented 9.2 percent of the total expenditures in 1977; dental care represented 2.5 percent, and drugs were 6.2 percent. While there has been some fluctuation during the intervening years for these items, there is little difference in expenditure patterns for 1967 and 1977.

The veterans' hospital system was established after World War I and expanded following World War II to provide medical care for veterans with service-connected disabilities. After 1924, care was extended to veterans without service-connected disabilities who met the entitlement and eligibility criteria. However, those veterans with service-connected disabilities receive the highest priority in access to care.

Veterans' medical care expenditures totaled $4.8 billion in fiscal year 1978, 4 times the 1965 level of $1.2 billion. The proportion spent on inpatient hospital care has been decreasing steadily and, in 1978, represented 64 percent of the total expenditures. Concurrently, proportionate expenditures for outpatient care have been increasing, from 12 percent in 1965 to 19 percent in 1978. There have also been slight increases in expenditures for Veterans Administration nursing homes and domiciliaries as well as community nursing homes.

E. Research and development

National funding for health research and development amounted to $6.2 billion in 1978, an average annual increase of 11.2 percent over the 1960 level of $918 million. The most rapid growth occurred between 1960 and 1968, with an average annual increase of 13.8 percent, and slowed to an average of 9.1 percent per year between 1968 and 1978.

In 1978, $3.8 billion or 61.5 percent of all health research and development support came from Federal sources. This proportion was a sizable increase from the 48.8 percent figure in 1960, but it has shown little change during the past decade.

Federal funding for health research and development increased at an average annual rate of 12.6 percent from 1960 to 1978. As with total funding, the most rapid growth occurred between 1960 and 1968 with an average annual increase of 17.1 percent; the rate then slowed to an average of 9.1 percent per year between 1968 and 1978. During 1973, the growth rate dropped to 3.6 percent when funds appropriated by Congress were withheld. When these funds were later released in 1974, a sharp increase to 23.8 percent resulted for 1973–74. The subsequent drop to 1.6 percent for 1974–75 reflects the excess of funds in 1974. Since 1975, the growth rate has shown a steady increase, reaching 12.8 percent for 1977–78.

Health research and development funding by private industry, which is primarily devoted to drug research, increased at an average annual rate of 11.4 percent between 1960 and 1978. Relatively little variation existed between the two periods, 1960–68 and 1968–78, with growth rates of 12.8 percent and 10.4 percent, respectively. For 1977–78, funding increased by 12.7 percent.

In 1978, private industry funding amounted to $1.8 billion or 28.8 percent of all support for health research and development. State government sources contributed $306 million or 5 percent of the total, and nonprofit organizations contributed $291 million or 4.7 percent. For 1977–78, the increases in health research and development funding for State governments and nonprofit organizations were 10.5 percent and 6.6 percent, respectively.

By far the greatest contributor of funds for health research and development is the Federal Government. Within the Federal Government, the Department of Health, Education, and Welfare accounts for the largest proportion of Federal obligations for health research and development—78.8 percent in 1978. More specifically, the National Institutes of Health accounted for $2.6 billion or 68.1 percent of all such Federal obligations in 1978—a share that has increased steadily from the $873.3 million, or the 52.4 percent it was in 1970.

Other Federal Government departments and agencies accounted for 21.2 percent of the Federal obligations for health research and development in 1978, a decrease from 29.4 percent in 1970. Within this category, the largest proportions have been attributed to the Department of Defense and the Department of Energy (formerly the Atomic Energy Commission from 1970 through 1973 and the Energy Research and Development Administration from 1974 through 1977). In 1978, they accounted for 4.3 percent and 5.1 percent of total obligations, respectively.

Looking at Federal expenditures for health research by category, cancer research has held a dominant position throughout the 1970's. The National Cancer Act of 1971 marked the beginning of an intensified research initiative by authorizing, among other provisions, increased appropriations to advance cancer research. Expenditures for this research have increased at an average annual rate of 20.6 percent, from $180.7 million or 10.6 percent of Federal health research expenditures in 1970 to $797.6 million or 20.4 percent in 1978.

While the proportion of Federal expenditures for cancer research has shown a steady rise (with the exception of a slight decrease for 1978), there has been sizable variation among the other research categories. The proportion devoted to cardiovascular research has varied considerably since 1970 when it accounted for 8.6 percent of Federal health research expenditures. In 1978, cardiovascular research amounted to 9.1 percent of the total, after peaking at 13.4 percent in 1973. Expenditures for health services research (including health planning) as a proportion of the total ranged from a low of 9.2 percent in 1976 to a high of 22.9 percent in 1972; for 1978, such research comprised 11.7 percent. The proportion spent for environmental health research reached 13.9 percent in 1976. Although this proportion declined to 12.6 percent of Federal health research expenditures in 1977 and 1978, it was still approximately 50 percent greater than the 8.6 percent in 1970.

Table 64. Gross national product and national health expenditures: United States, selected years 1929–78

(Data are compiled by the Health Care Financing Administration)

Year	Gross national product in billions	National health expenditures		
		Amount in billions	Percent of gross national product	Amount per capita
1929	$ 103.1	$ 3.6	3.5	$ 29.49
1935	72.2	2.9	4.0	22.65
1940	99.7	4.0	4.0	29.62
1950	284.8	12.7	4.5	81.86
1955	398.0	17.7	4.4	105.38
1960	503.7	26.9	5.3	146.30
1965	688.1	43.0	6.2	217.42
1966	753.0	47.3	6.3	236.51
1967	796.3	52.7	6.6	260.35
1968	868.5	58.9	6.8	288.17
1969	935.5	66.2	7.1	320.70
1970	982.4	74.7	7.6	358.63
1971	1,063.4	82.8	7.8	393.09
1972	1,171.1	92.7	7.9	436.47
1973	1,306.6	102.3	7.8	478.38
1974	1,412.9	115.6	8.2	535.99
1975	1,528.8	131.5	8.6	604.57
1976	1,700.1	148.9	8.8	678.79
1977	1,887.2	170.0	9.0	768.77
1978[1]	2,107.6	192.4	9.1	863.01

[1] Preliminary estimates.

SOURCES: Gibson, R.M.: National health expenditures, 1978. Health Care Financing Review 1(1):1-36, Summer 1979; Office of Research, Demonstrations, and Statistics, Health Care Financing Administration: Selected data.

Table 65. Personal health care expenditures, average annual percent change, and percent distribution of factors affecting growth: United States, 1969–78

(Data are compiled by the Health Care Financing Administration)

Year	Personal health care expenditures in millions	Average annual percent change[1]	Factors affecting growth			
			All factors	Prices	Population	Intensity[2]
			Percent distribution			
1969-78	...	12.6	100.0	63.0	7.0	30.0
1969	$ 57,888	---	---	---	---	---
1970	65,723	13.5	100.0	54.0	8.0	38.0
1971	72,115	9.7	100.0	65.0	11.0	24.0
1972	79,870	10.8	100.0	42.0	8.0	50.0
1973	88,471	10.8	100.0	43.0	7.0	50.0
1974	100,885	14.0	100.0	71.0	6.0	23.0
1975	116,297	15.3	100.0	80.0	5.0	15.0
1976	132,127	13.6	100.0	71.0	7.0	22.0
1977	149,139	12.9	100.0	68.0	7.0	25.0
1978	167,911	12.6	100.0	68.0	7.0	25.0

[1] Refers to one year periods unless otherwise noted.
[2] Represents changes in use and/or kinds of services and supplies.

SOURCE: Gibson, R.M.: National health expenditures, 1978. Health Care Financing Review 1(1):1-36, Summer 1979; Office of Research, Demonstrations, and Statistics, Health Care Financing Administration: Selected data.

Table 66. Consumer Price Index (1967 = 100) for all items and selected items: United States, selected years 1950–78

(Data are based on reporting by samples of providers and other retail outlets)

Year	Item						
	All items	Medical care	Food	Apparel and upkeep	Housing	Transportation	Personal care
	Consumer Price Index						
1950	72.1	53.7	74.5	79.0	72.8	68.2	68.3
1955	80.2	64.8	81.6	84.1	82.3	77.4	77.9
1960	88.7	79.1	88.0	89.6	90.2	89.6	90.1
1965	94.5	89.5	94.4	93.7	94.9	95.9	95.2
1970	116.3	120.6	114.9	116.1	118.9	112.7	113.2
1975	161.2	168.6	175.4	142.3	166.8	150.6	150.7
1976	170.5	184.7	180.8	147.6	177.2	165.5	160.5
1977	181.5	202.4	192.2	154.2	189.6	177.2	170.9
1978	195.3	219.4	211.2	159.5	202.6	185.8	182.0

SOURCE: Bureau of Labor Statistics, U.S. Department of Labor: Consumer Price Index. Various releases.

Table 67. Consumer Price Index (1967 = 100) average annual percent change for all items and selected items: United States, selected years 1950–78

(Data are based on reporting by samples of providers and other retail outlets)

Year	Item						
	All items	Medical care	Food	Apparel and upkeep	Housing	Transportation	Personal care
	Average annual percent change						
1950–55	2.2	3.8	1.8	1.3	2.5	2.6	2.7
1955–60	2.0	4.1	1.5	1.3	1.9	3.0	3.0
1960–65	1.3	2.5	1.4	0.9	1.0	1.4	1.1
1965–70	4.2	6.1	4.0	4.4	4.6	3.3	3.5
1970–75	6.7	6.9	8.8	4.2	7.0	6.0	5.9
1975–76	5.8	9.5	3.1	3.7	6.2	9.9	6.5
1976–77	6.5	9.6	6.3	4.5	7.0	7.1	6.5
1977–78	7.6	8.4	9.9	3.4	6.9	4.9	6.5

SOURCE: Bureau of Labor Statistics, U.S. Department of Labor: Consumer Price Index. Various releases.

Table 68. Consumer Price Index (1957 = 100) for all items and medical care components: United States, selected years 1950–78

(Data are based on reporting by samples of providers and other retail outlets)

Item and medical care component	Year								
	1950	1955	1960	1965	1970	1975	1976	1977	1978[1]
	Consumer Price Index								
CPI, all items	72.1	80.2	88.7	94.5	116.3	161.2	170.5	181.5	195.3
Less medical care	---	---	89.4	94.9	116.1	160.9	169.7	180.3	193.9
CPI, all services	58.7	70.9	83.5	92.2	121.6	166.6	180.4	194.3	210.8
All medical care	53.7	64.8	79.1	89.5	120.6	168.6	184.7	202.4	219.4
Medical care services	49.2	60.4	74.9	87.3	124.2	179.1	197.1	216.7	235.3
Hospital service charges[2,3]	---	---	---	---	---	132.3	148.7	164.1	[4]111.1
Semiprivate room	30.3	42.3	57.3	75.9	145.4	236.1	268.6	299.5	331.6
Operating room charges	---	---	---	82.9	142.4	239.4	274.8	311.3	---
X-ray diagnostic series, upper GI	---	---	---	90.9	110.3	156.2	174.6	189.4	---
Professional services:									
Physician fees	55.2	65.4	77.0	88.3	121.4	169.4	188.5	206.0	223.3
Dentist fees	63.9	73.0	82.1	92.2	119.4	161.9	172.2	185.1	199.3
Other professional services:									
Examination, prescription, and dispensing eyeglasses	73.5	77.0	85.1	92.8	113.5	149.6	158.9	168.2	---
Eyeglasses[3]	---	---	---	---	---	---	---	---	[4]104.4
Routine laboratory tests	---	---	---	94.8	111.4	151.4	160.5	169.4	---
Drugs and prescriptions	88.5	94.7	104.5	100.2	103.6	118.8	126.0	134.1	143.9
Prescriptions	92.6	101.6	115.3	102.0	101.2	109.3	115.2	122.1	132.1
Over-the-counter items	---	---	---	98.0	106.2	130.1	138.9	148.5	159.1

[1]Due to the 1978 revision of the Consumer Price Index, hospital service charges include nursing and convalescent home care and hospital emergency room care. Semiprivate room includes all hospital rooms. Also, detail on physician fees is no longer collected. These data are available for the years 1950-77 in Health, United States, 1978.
[2]Jan. 1972=100 for 1975, 1976, 1977.
[3]Dec. 1977=100 for 1978.
[4]Unadjusted index for Dec. 1978.

SOURCES: Bureau of Labor Statistics, U.S. Department of Labor: Consumer Price Index. Various releases.

Table 69. Consumer Price Index (1967 = 100) average annual percent change for all items and medical care components: United States, selected years 1950–78

(Data are based on reporting by samples of providers and other retail outlets)

Item and medical care component	Year							
	1950-55	1955-60	1960-65	1965-70	1970-75	1975-76	1976-77	1977-78[1]
	Average annual percent change							
CPI, all items	2.2	2.0	1.3	4.2	6.8	5.8	6.5	7.6
Less medical care	---	---	1.2	4.1	6.7	5.5	6.2	7.5
CPI, all services	3.9	3.3	2.0	5.7	6.5	8.3	7.7	8.5
All medical care	3.8	4.1	2.5	6.1	7.0	9.5	9.6	8.4
Medical care services	4.2	4.4	3.1	7.3	7.6	10.1	9.9	8.6
Hospital service charges	---	---	---	---	---	12.4	10.4	[2]11.1
Semiprivate room	6.9	6.3	5.8	13.9	10.2	13.8	11.5	10.7
Operating room charges	---	---	---	11.4	10.9	14.8	13.3	---
X-ray diagnostic series, upper GI	---	---	---	5.1	7.2	11.8	8.5	---
Professional services:								
Physician fees	3.5	3.3	2.8	6.0	6.9	11.3	9.3	8.4
Dentist fees	2.7	2.4	2.4	5.3	6.3	6.4	7.5	7.7
Other professional services:								
Examination, prescription, and dispensing eyeglasses	1.0	2.0	1.7	4.1	5.7	6.2	5.9	---
Eyeglasses	---	---	---	---	---	---	---	[2]4.4
Routine laboratory tests	---	---	---	3.3	6.3	6.0	5.5	---
Drugs and prescriptions	1.4	2.0	0.8	0.7	2.8	6.1	6.4	7.3
Prescriptions	1.9	2.0	2.2	0.1	1.6	5.4	6.0	8.2
Over-the-counter items	---	---	---	1.6	4.1	6.8	6.9	7.1

[1]Due to the 1978 revision of the Consumer Price Index, hospital service charges include nursing and convalescent home care and hospital emergency room care. Semiprivate room includes all hospital rooms. Also, detail on physician fees is no longer collected. These data are available for the years 1950-77 in Health, United States, 1978.
[2]Unadjusted percent change from Dec. 1977 to Dec. 1978.

SOURCE: Bureau of Labor Statistics, U.S. Department of Labor: Consumer Price Index. Various releases.

Table 70. National health expenditures, according to source of funds: United States, selected years 1929–78

(Data are compiled by the Health Care Financing Administration)

Year	All health expenditures in billions	Source of funds					
		Private			Public		
		Amount in billions	Amount per capita	Percent of total	Amount in billions	Amount per capita	Percent of total
1929	$ 3.6	$ 3.2	$ 25.49	86.4	$ 0.5	$ 4.00	13.6
1935	2.9	2.4	18.30	80.8	0.6	4.34	19.2
1940	4.0	3.2	23.61	79.7	0.8	6.03	20.3
1950	12.7	9.2	59.62	72.8	3.4	22.24	27.2
1955	17.7	13.2	78.33	74.3	4.6	27.05	25.7
1960	26.9	20.3	110.20	75.3	6.6	36.10	24.7
1965	43.0	32.3	163.29	75.1	10.7	54.13	24.9
1966	47.3	34.0	169.81	71.8	13.3	66.71	28.2
1967	52.7	33.9	167.61	64.4	18.8	97.74	35.6
1968	58.9	37.1	181.40	63.0	21.8	106.76	37.0
1969	66.2	41.6	201.83	62.9	24.5	118.87	37.1
1970	74.7	47.5	227.71	63.5	27.3	130.93	36.5
1971	82.8	51.4	244.12	62.1	31.4	148.97	37.9
1972	92.7	57.7	271.78	62.3	35.0	164.69	37.7
1973	102.3	63.6	297.17	62.1	38.8	181.22	37.9
1974	115.6	69.0	319.99	59.7	46.6	216.00	40.3
1975	131.5	75.8	348.61	57.7	55.7	255.96	42.3
1976	148.9	86.6	394.73	58.2	62.3	284.06	41.8
1977	170.0	100.7	455.27	59.2	69.3	313.50	40.8
1978[1]	192.4	114.3	512.62	59.4	78.1	350.40	40.6

[1] Preliminary estimates.

SOURCES: Gibson, R.M.: National health expenditures, 1978. Health Care Financing Review 1(1):1-36, Summer 1979; Office of Research, Demonstrations, and Statistics, Health Care Financing Administration: Selected data.

Table 71. National health expenditures average annual percent change, according to source of funds: United States, selected years 1929–78

(Data are compiled by the Health Care Financing Administration)

Period	All health expenditures	Source of funds	
		Private	Public
	Average annual percent change		
1929-78	8.5	7.6	10.9
1929-35	-3.5	-4.7	3.1
1935-40	6.6	5.9	5.9
1940-50	12.2	11.1	15.6
1950-55	6.9	7.5	6.2
1955-60	8.7	9.0	7.5
1960-65	9.8	9.7	10.1
1965-70	11.7	8.0	20.6
1970-75	12.0	9.8	15.3
1970-71	10.8	8.2	15.0
1971-72	12.0	12.3	11.5
1972-73	10.4	10.2	10.9
1973-74	13.0	8.5	20.1
1974-75	13.8	9.9	19.5
1975-76	13.2	14.2	11.8
1976-77	14.2	16.3	11.2
1977-78	13.2	13.5	12.7

SOURCES: Gibson, R.M.: National health expenditures, 1978. Health Care Financing Review, 1(1):1-36, Summer 1979; Office of Research, Demonstrations, and Statistics, Health Care Financing Administration: Selected data.

Table 72. Personal health care expenditures and percent distribution, according to source of payment: United States, selected years 1929–78

(Data are compiled by the Health Care Financing Administration)

Year	All personal health care expenditures[1]	Source of payment							
		All sources	Direct payment	Third-party payment					
				Total	Private health insurance	Philanthropy and industry	Government		
							Total	Federal	State and local
		Percent distribution							
1929	$ 3,202	100.0	[2]88.4	11.6	---	2.6	9.0	2.7	6.3
1935	2,663	100.0	[2]82.4	17.6	---	2.8	14.7	3.4	11.3
1940	3,548	100.0	[2]81.3	18.7	---	2.6	16.1	4.1	12.0
1950	10,885	100.0	65.5	34.5	9.1	2.9	22.4	10.4	12.0
1955	15,708	100.0	58.1	41.9	16.1	2.8	23.0	10.5	12.5
1960	23,680	100.0	54.9	45.1	21.1	2.3	21.8	9.3	12.5
1965	37,267	100.0	53.4	46.6	23.4	2.0	21.1	10.2	11.0
1970	65,723	100.0	40.4	59.6	24.0	1.5	34.1	22.2	12.0
1971	72,115	100.0	38.2	61.8	24.6	1.6	35.7	23.3	12.4
1972	79,870	100.0	38.1	61.9	24.3	1.5	36.1	23.7	12.3
1973	88,471	100.0	38.0	62.0	24.3	1.4	36.2	23.9	12.4
1974	100,885	100.0	35.4	64.6	25.0	1.4	38.3	25.6	12.6
1975	116,297	100.0	32.5	67.5	26.6	1.3	39.7	27.1	12.6
1976	132,127	100.0	31.7	68.3	28.1	1.2	39.1	27.5	11.6
1977	149,139	100.0	32.6	67.4	27.2	1.3	39.0	27.6	11.4
1978[3]	167,911	100.0	32.9	67.1	27.0	1.3	38.7	27.7	11.0

[1] Includes all expenditures for health services and supplies other than (a) expenses for prepayment and administration, (b) government public health activities, and (c) expenditures on fundraising by philanthropies.
[2] Includes any insurance benefits and expenses for prepayment (insurance premiums less insurance benefits).
[3] Preliminary estimates.

SOURCES: Gibson, R.M.: National health expenditures, 1978. Health Care Financing Review 1(1):1-36, Summer 1979; Office of Research, Demonstrations, and Statistics, Health Care Financing Administration: Selected data.

Table 73. National health expenditures and percent distribution, according to type of expenditure: United States, selected years 1950–78

(Data are compiled by the Health Care Financing Administration)

Type of expenditure	Year						
	1950	1960	1965	1970	1975	1977	1978[1]
	Amount in billions						
Total	$12.7	$26.9	$43.0	$74.7	$131.5	$170.0	$192.4
	Percent distribution						
All expenditures	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Health services and supplies	92.4	93.6	92.0	92.9	93.7	94.9	95.1
Hospital care	30.4	33.8	32.4	37.2	39.7	40.0	39.5
Physician services	21.7	21.1	19.7	19.2	19.0	18.4	18.3
Dentist services	7.6	7.4	6.5	6.4	6.3	6.9	6.9
Nursing home care	1.5	2.0	4.8	6.3	7.5	7.9	8.2
Other professional services	3.1	3.2	2.4	2.1	2.0	2.2	2.2
Drugs and drug sundries	13.6	13.6	13.4	11.3	9.0	8.1	7.9
Eyeglasses and appliances	3.9	2.9	4.3	2.8	2.3	2.0	2.0
Expenses for prepayment	3.6	4.1	3.4	3.1	2.8	4.6	5.2
Government public health activities	2.9	1.5	1.9	1.9	2.4	2.5	2.6
Other health services	4.2	4.1	3.0	2.8	2.8	2.4	2.3
Research and construction	7.6	6.4	8.1	7.1	6.3	5.2	4.9
Research	0.9	2.5	3.4	2.5	2.4	2.2	2.2
Construction	6.7	3.9	4.7	4.6	3.9	3.0	2.7

[1]Preliminary estimate.

SOURCES: Gibson, R.M.: National health expenditures, 1978. Health Care Financing Review 1(1):1-36, Summer 1979; Office of Research, Demonstrations, and Statistics, Health Care Financing Administration: Selected data.

Table 74. National health expenditures average annual percent change, according to type of expenditure: United States, selected years 1950–78

(Data are compiled by the Health Care Financing Administration)

Type of expenditure	Period					
	1950-78	1950-60	1960-65	1965-70	1970-75	1975-78
	Average annual percent change					
All expenditures	10.2	7.8	9.8	11.7	12.0	13.5
Health services and supplies	10.3	8.0	9.4	11.9	12.1	14.1
Hospital care	11.2	9.9	7.1	14.8	13.4	13.4
Physician services	9.5	7.5	8.3	11.1	11.7	12.2
Dentist services	9.8	7.5	7.3	11.1	11.6	17.3
Nursing home care	17.2	10.9	31.5	17.7	16.1	16.8
Other professional services	8.9	8.1	3.7	9.1	10.4	17.7
Drugs and drug sundries	8.1	7.8	9.6	7.8	7.0	8.5
Eyeglasses and appliances	7.7	4.7	19.2	2.4	7.3	9.2
Expenses for prepayment	11.7	9.1	5.9	9.5	10.2	39.2
Government public health activities	9.9	1.4	14.7	11.8	17.3	16.6
Other health services	7.8	7.7	3.4	9.5	12.4	5.5
Research and construction	8.5	5.9	15.2	8.8	9.3	4.6
Research	13.7	18.9	17.2	4.9	11.3	10.4
Construction	6.7	2.2	13.8	11.4	8.1	0.6

SOURCES: Gibson, R.M.: National health expenditures, 1978. Health Care Financing Review 1(1):1-36, Summer 1979; Office of Research, Demonstrations, and Statistics, Health Care Financing Administration: Selected data.

Table 75. Hospital expenses per inpatient day, personnel and number per 100 patients, and average annual percent change: United States, selected years 1965–77

(Data are based on reporting by a census of hospitals)

Year and period	Adjusted expenses per inpatient day[1]			Payroll costs as percent of total	Personnel[2]	
	Total	Payroll	Non-payroll		Number in thousands	Number per 100 patients
1965	$ 40.56	$25.02	$15.54	61.7	1,386	224
1970	73.73	43.05	30.68	58.4	1,929	265
1971	83.43	48.62	34.81	58.3	1,999	272
1972	94.61	53.77	40.84	56.8	2,056	278
1973	101.78	56.67	45.11	55.7	2,149	280
1974	113.21	61.74	51.47	54.5	2,289	289
1975	133.08	70.60	62.48	53.1	2,399	298
1976	152.24	78.59	73.65	51.6	2,483	304
1977	173.25	87.12	86.13	50.3	2,581	315
	Average annual percent change					
1965-77	12.9	11.0	15.3	...	5.3	2.9
1965-70	12.7	11.5	14.6	...	6.8	3.4
1970-71	13.2	12.9	13.5	...	3.6	2.6
1971-72	13.4	10.6	17.3	...	2.9	2.2
1972-73	7.6	5.4	10.5	...	4.5	0.7
1973-74	11.2	8.9	14.1	...	6.5	3.2
1974-75	17.6	14.4	21.4	...	4.8	3.1
1975-76	14.4	11.3	17.9	...	3.5	2.0
1976-77	13.8	10.9	16.9	...	3.9	3.6

[1] Refers exclusively to expenses incurred for inpatient care.
[2] Full-time equivalent personnel.

NOTE: Data refer to non-Federal short-term general and other specialty hospitals.

SOURCE: American Hospital Association: Hospital Statistics, 1978 Edition. Chicago, 1978. (Copyright 1978: Used with the permission of the American Hospital Association.)

Table 76. Average annual percent increases in average hospital expenses per patient day, according to contributing factors: United States, selected years 1960–78

(Data are based on a number of government and private sources)

Contributing factor	Period						
	1960-65[1]	1965-68	1968-71	1971-74	1974-76	1976-77	1977-78
	Average annual percent increase						
Total	6.7	11.2	14.3	10.7	16.0	13.8	12.1
Wages and prices	3.5	5.3	8.2	6.5	9.1	6.9	8.2
Wage rates	4.8	6.6	10.1	6.2	10.2	7.1	8.6
Prices of hospital purchases	1.3	3.4	5.4	7.0	7.8	6.7	7.8
Services	3.2	5.9	6.1	4.2	6.9	6.9	3.9
Hospital employees	1.7	3.4	3.3	2.1	2.6	3.7	3.2
Other expenses[2]	5.8	9.8	10.2	6.9	11.8	10.2	4.6
	Percent of total increase						
Wages and prices	52.2	47.3	57.3	60.7	56.9	50.0	67.8
Services	47.8	52.7	42.7	39.3	43.1	50.0	32.2

[1]Statistics calculated on a per patient day basis; statistics for all other periods are calculated on a per adjusted patient day basis. The latter includes an approximation of equivalent services to outpatients.
[2]Nonlabor expenses such as X-rays, laboratory tests, etc.

NOTE: Statistics are based on data from the National Hospital Panel Survey for 1977-78; statistics for all other periods are based on data from the Annual Survey of Hospitals.

SOURCES: American Hospital Association: Hospital Statistics, 1978 Edition. Chicago, 1978; Office of Research Affairs: National Hospital Economic Activity, Report No. 53, American Hospital Association, Mar. 1979; Bureau of Labor Statistics, U.S. Department of Labor: Consumer Price Index. Various releases.

Table 77. Monthly charge for care in nursing homes and percent distribution of residents, according to selected facility and resident characteristics: United States, 1964, 1973–74, and 1977

(Data are based on reporting by a sample of nursing homes)

Facility and resident characteristic	Year					
	1964		1973-74[2]		1977	
	Average total monthly charge[1]	Percent distribution of residents	Average total monthly charge[1]	Percent distribution of residents	Average total monthly charge[1]	Percent distribution of residents
FACILITY CHARACTERISTIC						
All facilities	$186	100.0	$479	100.0	$689	100.0
Type of service provided						
Nursing care	212	67.4	495	64.8	719	85.4
Personal care with or without nursing	117	32.6	448	35.2	514	14.6
Ownership						
Proprietary	205	60.2	489	69.8	670	68.2
Nonprofit and government	145	39.8	456	30.2	732	31.8
Size						
Less than 50 beds	---	---	397	15.2	546	12.9
50-99 beds	---	---	448	34.1	643	30.5
100-199 beds	---	---	502	35.6	706	38.8
200 beds or more	---	---	576	15.1	837	17.9
Geographic region						
Northeast	213	28.6	651	22.0	918	22.4
North Central	171	36.6	433	34.6	640	34.5
South	161	18.1	410	26.0	585	27.2
West	204	16.7	454	17.4	653	15.9
RESIDENT CHARACTERISTIC						
All residents	186	100.0	479	100.0	689	100.0
Age						
Under 65 years	155	12.0	434	10.6	585	13.6
65-74 years	184	18.9	473	15.0	669	16.2
75-84 years	191	41.7	488	35.5	710	35.7
85 years and over	194	27.5	485	38.8	719	34.5
Sex						
Male	171	35.0	466	29.1	652	28.8
Female	194	65.0	484	70.9	705	71.2
Level of care received						
Intensive nursing care	224	31.0	510	40.6	758	43.8
Other nursing care	199	28.7	469	42.1	659	40.7
Personal care	164	26.9	435	16.4	586	14.4
No nursing or personal care	109	13.5	315	0.9	388	1.1

[1] Includes life-care residents and no-charge residents.
[2] Data exclude residents of personal care homes.

SOURCE: National Center for Health Statistics: Charges for care and sources for payment for residents in nursing homes, United States, National Nursing Home Suvey, Aug. 1973-Apr. 1974, by E. Hing. Vital and Health Statistics. Series 13-No. 32. DHEW Pub. No. (PHS) 78-1783. Public Health Service. Washington. U.S. Government Printing Office. Nov. 1977; Unpublished data from 1977 National Nursing Home Survey.

Table 78. Personal health care per capita expenditures and percent distribution, according to source of payment and age: United States, fiscal years 1966–77

(Data are compiled by the Health Care Financing Administration)

Age and year	All personal health care expenditures	Source of payment					
		All sources	Direct payment	Third-party payment			
				Total	Private health insurance	Philanthropy and industry	Government
All ages				Percent distribution			
1966	$ 181.96	100.0	51.5	48.5	24.7	2.0	21.8
1967	205.45	100.0	45.4	54.6	22.6	1.8	30.1
1968	228.75	100.0	41.1	58.9	22.4	1.7	34.8
1969	256.59	100.0	39.8	60.2	23.2	1.6	35.5
1970	289.76	100.0	40.4	59.6	24.0	1.5	34.2
1971	320.84	100.0	39.1	60.9	24.9	1.4	34.6
1972	353.00	100.0	37.6	62.4	24.9	1.4	36.1
1973	386.84	100.0	36.8	63.2	25.4	1.4	36.4
1974[1]	425.15	100.0	36.1	63.9	25.2	1.3	37.3
1975[1]	488.23	100.0	33.6	66.4	25.4	1.3	39.7
1976[2,3]	551.50	100.0	32.5	67.5	26.0	1.3	40.2
1977[2,3]	646.11	100.0	30.3	69.7	27.6	2.0	40.1
Under 65 years							
1966	154.96	100.0	51.1	48.9	27.3	2.2	19.4
1967	171.55	100.0	48.1	51.9	28.0	2.2	21.7
1968	185.39	100.0	46.0	54.0	28.6	2.0	23.3
1969	206.36	100.0	44.2	55.8	29.8	1.9	24.1
1970	232.50	100.0	43.3	56.7	31.0	1.9	23.9
1971	255.09	100.0	41.1	58.9	32.6	1.8	24.5
1972	278.23	100.0	38.4	61.6	33.0	1.5	26.8
1973	309.45	100.0	38.3	61.7	33.2	1.7	26.8
1974[1]	347.87	100.0	39.0	61.0	32.3	1.7	27.0
1975[1]	390.79	100.0	36.5	63.5	33.3	1.6	28.6
1976[2,3]	437.83	100.0	34.9	65.1	34.5	1.7	29.0
1977[2,3]	514.25	100.0	31.9	68.1	36.4	2.6	29.1
65 years and over							
1966	445.25	100.0	53.2	46.8	15.9	1.1	29.8
1967	535.03	100.0	37.0	63.0	5.9	0.8	56.4
1968	646.65	100.0	27.5	72.5	5.3	0.6	66.6
1969	735.19	100.0	28.0	72.0	5.4	0.5	66.1
1970	828.31	100.0	32.6	67.4	5.5	0.5	61.4
1971	925.98	100.0	34.2	65.8	5.4	0.5	60.0
1972	1,033.51	100.0	35.5	64.5	5.2	0.4	58.9
1973	1,081.35	100.0	33.0	67.0	5.4	0.4	61.1
1974[1]	1,109.54	100.0	28.0	72.0	5.7	0.5	65.9
1975[1]	1,335.72	100.0	26.3	73.7	5.4	0.4	68.0
1976[2,3]	1,521.36	100.0	26.5	73.5	5.4	0.4	67.7
1977[2,3]	1,745.17	100.0	26.5	73.5	5.8	0.7	67.0

[1] Revised estimates.
[2] Preliminary estimates.
[3] Data for fiscal year ending September 30; all other data for fiscal year ending June 30.

SOURCES: Gibson, R.M., and Mueller, M.S.: Age differences in health care spending, fiscal year 1974. Soc. Secur. Bull. 38(6):3-14, June 1975; Gibson, R.M., Mueller, M.S., and Fisher, C.R.: Age differences in health care spending, fiscal year 1976. Soc. Secur. Bull. 40(8):3-14, Aug. 1977; Gibson, R.M., and Fisher, C.R.: Age differences in health care spending, fiscal year 1977. Soc. Secur. Bull. 42(1):3-16, Jan. 1979.

Table 79. Medicare expenditures and percent distribution for persons 65 years of age and over, according to type of service: United States, fiscal years 1967–77

(Data are compiled by the Health Care Financing Administration)

Type of service	Year										
	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977[1]
	Expenditure in millions										
Total	$3,172	$5,126	$6,299	$6,783	$7,477	$8,364	$9,040	$10,158	$13,373	$15,591	$18,282
	Percent distribution										
All services	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Hospital care	76.0	66.3	69.2	70.4	73.0	74.3	75.1	76.6	74.8	74.5	74.0
Physician's services	20.3	25.8	23.7	23.9	23.2	22.8	22.3	20.4	21.6	21.6	21.7
Nursing home care	3.1	6.7	5.8	4.4	2.9	2.0	1.7	2.1	2.1	2.0	1.9
Other services[2]	0.7	1.2	1.2	1.3	1.0	0.9	0.9	1.0	1.5	1.8	2.3

[1]Data for fiscal year ending September 30; all other data for fiscal year ending June 30.
[2]Other services include Home Health Agencies and Home Health Services.

SOURCES: Mueller, M.S., and Gibson, R.M.: Age differences in health care spending, fiscal year 1974. Soc. Secur. Bull. 38(6):3-14, June 1975; Gibson, R.M., and Fisher, C.R.: Age differences in health care spending, fiscal year 1977. Soc. Secur. Bull. 42(1):3-16, Jan. 1979; Office of the Actuary, Health Care Financing Administration: Selected data.

Table 80. Medicaid expenditures[1] and percent distribution, according to type of service: United States, fiscal years 1967–77

(Data are compiled from State and Federal Government sources)

Type of service	Year										
	1967	1968	1969	1970	1971	1972[2]	1973	1974	1975	1976	1977[3]
	Expenditure in millions										
Total	$2,771	$3,451	$4,368	$5,112	$6,476	$7,713	$8,810	$10,149	$12,318	$14,245	$16,300
All services	Percent distribution										
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Inpatient hospital care	40.2	39.4	36.3	36.9	35.3	38.2	35.3	33.5	31.8	31.7	31.5
Physician's services	9.9	11.0	11.8	11.3	11.1	10.4	10.8	10.7	10.0	9.7	9.2
Nursing home care	33.7	30.8	29.6	25.8	25.8	23.1	21.0	20.0	20.1	18.2	17.2
Intermediate care[4]	---	---	2.2	5.9	8.3	9.6	13.2	15.8	17.7	19.5	22.0
Dental care	3.2	5.5	4.8	3.3	2.8	2.4	2.4	2.6	2.8	2.7	2.5
Prescribed drugs	7.9	6.8	6.9	7.7	7.3	7.1	7.0	7.0	6.6	6.7	6.2
Other services[5]	5.1	6.4	8.4	8.9	9.3	9.2	10.3	10.5	11.0	11.3	11.4

[1] Expenditures from Federal, State, and local funds under Medicaid. Excludes per capita payments for Part B of Medicare and administrative costs.
[2] Does not include Guam.
[3] Data for fiscal year ending September 30; all other data for fiscal year ending June 30.
[4] Payments to intermediate care facilities are included in the total for fiscal years 1969-72 even though they were administered under the cash assistance program until Jan. 1, 1972, when they were switched to Title XIX.
[5] Other services include laboratory and radiological services, home health, family planning services, and outpatient hospital services.

SOURCES: U.S. House of Representatives, Committee on Interstate and Foreign Commerce: Data on the Medicaid Program, Eligibility, Services, Expenditures, Fiscal years 1966-77. Washington. U.S. Government Printing Office, Mar. 1977. p. 32; Office of Research, Office of Policy, Planning, and Research: Medicaid Statistics Fiscal Year 1977. DHEW Pub. No. (HCFA) 78-03154. Health Care Financing Administration. Washington. U.S. Government Printing Office, April 1978.

Table 81. Veterans' medical care expenditures[1] and percent distribution, according to type of expenditure: United States, fiscal years 1965 and 1970–78

(Data are compiled from Veterans Administration sources)

Type of expenditure	Year									
	1965	1970	1971	1972	1973	1974	1975	1976	1977[2]	1978[2]
	Amount in millions									
Total	$1,150.1	$1,688.6	$1,915.5	$2,273.3	$2,548.9	$2,837.7	$3,328.2	$3,838.8	$4,376.3	$4,809.3
	Percent distribution									
All expenditures	100	100	100	100	100	100	100	100	100	100
Inpatient hospital	82	71	70	69	68	68	66	66	65	64
Outpatient care	12	14	16	17	17	17	18	18	19	19
VA nursing homes and domiciliaries	3	4	5	5	5	5	5	5	5	5
Community nursing homes	-	1	1	1	1	1	1	1	2	2
All others[3]	3	9	9	8	9	9	10	10	10	10

[1] Medical care expenditures exclude construction, medical administration, and miscellaneous operating expenses.
[2] Data for fiscal year ending September 30; all other data for fiscal year ending June 30.
[3] Includes miscellaneous benefits and services, contract hospitals, education and training for 1969-78, subsidies to State veterans' hospitals, nursing homes, and domiciliaries, and the Civilian Health and Medical Program of the Veterans Administration.

SOURCE: Veterans Administration: Unpublished data from the Budget Office.

Table 82. National funding for health research and development and average annual percent change, according to source of funds: United States, selected years 1960–78

(Data are based on multiple sources)

Year and period	All funding	Source of funds			
		Government		Industry[1]	Nonprofit organization
		Federal	State		
	Amount in millions				
1960	$ 918	$ 448	$ 78	$ 253	$139
1968	2,576	1,582	125	661	208
1970	2,827	1,667	150	795	215
1971	3,133	1,877	163	860	233
1972	3,478	2,147	179	925	227
1973	3,691	2,225	201	1,033	232
1974	4,415	2,754	222	1,187	252
1975	4,587	2,799	232	1,292	264
1976	4,967	3,023	252	1,425	267
1977	5,485	3,360	277	1,575	273
1978[2]	6,161	3,789	306	1,775	291
	Average annual percent change				
1960-78	11.2	12.6	7.9	11.4	4.2
1960-68	13.8	17.1	6.1	12.8	5.2
1968-78	9.1	9.1	9.4	10.4	3.4
1970-71	10.8	12.6	8.7	8.2	8.4
1971-72	11.0	14.4	9.8	7.6	2.6
1972-73	6.1	3.6	12.3	11.7	2.2
1973-74	19.6	23.8	10.4	14.9	8.6
1974-75	3.9	1.6	4.5	8.8	4.8
1975-76	8.3	8.0	8.6	10.3	1.1
1976-77	10.4	11.1	9.9	10.5	2.2
1977-78[2]	12.3	12.8	10.5	12.7	6.6

[1] Includes expenditures for drug research. These expenditures are included in the "drugs and sundries" component of the Social Security Administration's National Health Expenditure Series, not under "research."
[2] Preliminary estimates.

SOURCE: Office of Program Planning and Evaluation, National Institutes of Health, Public Health Service: Selected data.

Table 83. Federal obligations for health research and development and percent distribution, according to agency: United States, fiscal years 1970–78

(Data are compiled from Federal Government sources)

Agency	Year								
	1970	1971	1972	1973	1974	1975	1976	1977[1]	1978[1]
	Amount in millions								
Total	$1,666.6	$1,876.6	$2,147.3	$2,225.3	$2,753.6	$2,798.9	$3,023.5	$3,359.9	$3,788.8
	Percent distribution								
All Federal agencies	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Department of Health, Education, and Welfare	70.6	70.1	73.8	72.3	76.0	77.3	77.6	77.8	78.8
National Institutes of Health	52.4	55.4	59.2	59.5	63.1	65.9	66.9	66.8	68.1
Other Public Health Service	16.2	13.2	12.8	11.5	11.4	10.0	9.5	9.2	9.3
Other Department of Health, Education, and Welfare	2.0	1.6	1.7	1.4	1.5	1.4	1.2	1.9	1.4
Other agencies	29.4	29.9	26.2	27.7	24.0	22.7	22.4	22.2	21.2
Department of Agriculture	3.0	3.2	3.1	2.7	2.2	2.2	2.0	2.5	2.5
Department of Defense	7.5	6.6	5.9	5.7	4.3	4.1	3.9	4.5	4.3
Department of Energy[2]	...	...	...	...	...	...	...	...	5.1
Department of the Interior	0.7	1.2	1.6	1.5	1.2	0.3	0.4	0.3	0.4
Department of State	0.6	0.8	0.7	0.7	0.4	0.2	0.3	0.7	0.5
Department of Transportation	0.6	2.2	1.8	2.9	2.4	0.4	0.2	0.2	0.2
Atomic Energy Commission[2]	6.3	5.6	4.8	5.0	...	...	...	...	...
Consumer Product Safety Commission	...	...	...	...	0.2	0.3	0.2	0.2	0.1
Energy Research and Development Administration[2]	...	...	...	...	4.4	5.9	5.6	5.4	...
Environmental Protection Agency	...	0.7	0.7	0.9	0.7	1.4	2.4	1.7	1.5
National Aeronautics and Space Administration	5.2	4.0	2.3	1.9	2.9	2.7	2.4	1.4	1.5
National Science Foundation	1.7	1.8	1.7	2.0	1.7	1.6	1.7	1.6	1.7
Veterans Administration	3.5	3.3	3.2	3.3	3.1	3.4	3.1	3.2	3.1
All other departments and agencies	0.3	0.3	0.3	0.9	0.7	0.3	0.3	0.3	0.2

[1]Data for fiscal year ending September 30; all other data for fiscal year ending June 30.
[2]Data for Atomic Energy Commission, Energy Research and Development Administration, and the Department of Energy form a continuous series.

SOURCE: Office of Program Planning and Evaluation, National Institutes of Health, Public Health Service: Selected data.

Table 84. Federal expenditures for health research and planning and percent distribution, according to category: United States, fiscal years 1970–78

(Data are compiled from Federal Government sources)

Category	Year								
	1970	1971	1972	1973	1974	1975	1976	1977[1]	1978[1,2]
	Expenditure in millions								
Total	$1,705	$1,847	$2,302	$2,460	$2,477	$2,772	$3,351	$3,523	$3,910
	Percent distribution								
All categories	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Cancer	10.6	8.7	11.1	14.3	16.0	18.0	19.6	21.8	20.4
Cardiovascular	8.6	5.8	7.2	13.4	9.4	9.6	9.8	8.7	9.1
Mental health	5.0	4.7	4.5	4.1	5.0	4.0	3.7	4.1	3.8
Neurological and visual	5.3	3.1	5.4	5.6	5.7	5.6	6.1	5.6	6.1
Population and family planning	1.0	1.3	1.6	1.9	1.9	2.1	1.9	1.9	1.9
Environmental health	8.6	10.6	8.6	8.5	9.9	10.8	13.9	12.6	12.6
Aging	---	---	0.9	1.3	1.9	1.9	1.8	1.2	1.4
Metabolic diseases	---	---	5.6	5.9	5.8	4.9	5.8	5.3	5.8
Child health	---	---	2.8	2.8	2.9	2.6	3.1	2.4	2.5
Infectious diseases	---	---	6.2	6.2	5.3	4.7	5.1	5.4	5.4
Pulmonary	---	---	1.0	1.3	1.7	1.7	1.7	1.8	1.8
Dental	---	---	1.5	1.5	1.7	1.5	1.7	1.4	1.5
Health services research and planning	10.5	17.9	22.9	18.6	15.8	14.2	9.2	13.1	11.7
Other research and development	50.4	47.9	20.7	14.8	17.2	18.3	16.6	14.8	16.0

[1]Data for fiscal year ending September 30; all other data for fiscal year ending June 30.
[2]Estimate.

SOURCE: Executive Office of the President, Office of Management and Budget: Special Analyses Budget of the United States Government, Fiscal Years 1972-1979. U.S. Government Printing Office, Washington, D.C.

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APPENDIX I

Sources and Limitations of Data

Introduction

This report consolidates the most current data on the health of the population of the United States, the availability and use of health resources, and health care expenditures. The information was obtained from the data files and/or published reports of many governmental and nongovernmental agencies and organizations. In each case, the sponsoring agency or organization collected data using its own methods and procedures. Therefore, the data in this report vary considerably with respect to source, method of collection, definitions, and reference period.

In most instances, data referred to in the text of Part B are from the ongoing data collection systems of the National Center for Health Statistics (NCHS). Unless otherwise noted, the data in Section I, Health Status and Determinants, Section II, Utilization of Health Resources, and Section III-B, Health Care Resources—Facilities are based on NCHS data systems. In Section III-A, Health Care Resources—Manpower, the data come primarily from the Bureau of Health Manpower, Health Resources Administration, and the American Medical Association. The national health expenditures data, including public and personal health care expenditures found in Sections IV-A, IV-B, and IV-D, were compiled by the Office of Research, Demonstrations, and Statistics, Health Care Financing Administration.

Although a detailed description and comprehensive evaluation of each data source is beyond the scope of this appendix, users should be aware of the general strengths and weaknesses of the different data collection systems. For example, population-based surveys obtain socioeconomic data, data on family characteristics, and information on the impact of an illness, such as days lost from work or limitation of activity. However, they are limited by the amount of information a respondent remembers or is willing to report. Detailed medical information such as precise diagnoses or the types of operations performed may not be known and so will not be reported. Conversely, health care providers, such as physicians and hospitals, usually have good diagnostic information but little or no information about the socioeconomic characteristics of individuals or the impact of an illness on the individual.

The population covered by different data collection systems may not be the same, and understanding the differences is critical to interpreting the data. Data on vital statistics and national expenditures cover the entire population. Most data on morbidity and utilization of health resources cover only the civilian noninstitutionalized population. Thus, statistics are not included for military personnel, who are usually young; for institutionalized people, who may, for example, be prisoners of any age; or nursing home residents, who are usually old.

All data collection systems are subject to error, and records may be incomplete or contain inaccurate information. People may not remember essential information, a question may not mean the same thing to different respondents, and some institutions or individuals may not respond at all. The sponsoring agencies do the best they can, but it is not always possible to measure the magnitude of these errors or their impact on the data. Where possible, the tables have notes describing the universe and the method of data collection to enable the user to place his or her own evaluation on the data. In many instances, data do not add to totals because of rounding.

Data collection systems based on samples have sampling errors in addition to errors mentioned above. A sampling error is a measure of the variability introduced because only a sample of the universe was taken. In general, data with large sampling errors are not shown in this report. Most tables also show when the data are based on a sample.

The fact that a sample has an additional source of error does not mean that sample data are less reliable than full-count data. Frequently, the money saved by taking only a sample is spent on reducing other forms of error through more pretesting of survey forms, better quality control, and other measures.

The descriptive summaries that follow provide a general overview of study design, methods of data collection, and reliability and validity of the data. More complete and detailed discussions are found in the publications referenced at the end of each summary. The data set or source is listed under the agency or organization that sponsored the data collection.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Public Health Service

OFFICE OF HEALTH RESEARCH, STATISTICS, AND TECHNOLOGY

National Center for Health Statistics

Vital Registration System

The vital registration system of the National Center for Health Statistics (NCHS) collects and publishes data on births, deaths, marriages, and divorces in the United States. Fetal deaths are classified and tabulated separately from other deaths. The Division of Vital Statistics obtains information on births and deaths from the registration offices of all States, certain cities that perform their own data collection, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and Guam. Geographic coverage for births and deaths has been complete since 1933.

Until 1972, microfilm copies of all death certificates and a 50-percent sample of birth certificates were received from all registration areas and processed by NCHS. Beginning in 1972, some States began sending their data to NCHS through the Cooperative Health Statistics System (CHSS). States that participate in the CHSS program process 100 percent of their death and birth records and send the entire data file to NCHS on computer tape. The number of participating States has grown from 6 in 1972 to 38 in 1978.

The standard certificates of birth, death, and fetal death recommended by NCHS are modified in each registration area to serve the area's needs. However, most certificates conform closely in content and arrangement to the standard certificate, and all certificates contain a minimum data set specified by NCHS.

In most areas, practically all births and deaths are registered. The most recent survey of the completeness of birth registration, conducted on a sample of births from 1964 to 1968, showed that 99.3 percent of all births in the United States during that period were registered. No comparable information is available for deaths, but it is generally believed that death registration in the United States is at least as complete as birth registration. However, there are isolated areas in the United States where underreporting of births and deaths may be severe enough to affect the validity of local statistics.

For more information, see: National Center for Health Statistics, *Vital Statistics of the United States, 1975,* Vol. I, DHEW Pub. No. (PHS) 78-1113 and Vol. II, Part A, DHEW Pub. No. (PHS) 79-1114, Public Health Service, Washington, U.S. Government Printing Office, 1978 and 1979.

National Survey of Family Growth

Data from the National Survey of Family Growth (NSFG) are based on a five-stage probability sample of civilian noninstitutionalized women living in the coterminous United States who are 15–44 years of age and who are currently married, previously married, or never married but have offspring living in the household.

The counties and independent cities of the United States were combined to form a frame of primary sampling units (PSU's), and 101 PSU's were selected as the first-stage sample for Cycle I of NSFG, conducted from June 1973 to February 1974. The next three stages produced a clustered sample of 28,998 households within the 101 PSU's. At 26,028 of these households (89.8 percent), a household screener interview was completed. These screeners produced a fifth-stage sample of 10,879 women, of which 9,797 were interviewed.

Cycle II of NSFG was conducted from January to September 1976. The sample design was basically the same as it was in Cycle I. The sample consisted of 27,162 households in 79 PSU's. Household screener interviews were completed at 25,479 of these households (93.8 percent). Of the 10,202 women in the sample, 8,611 were interviewed.

In order to produce estimates for the entire population of eligible women in the United States, data for the interviewed sample women were inflated by the reciprocal of the probability of selection at each stage of sampling and adjusted for both screener and interview nonresponse. In addition, estimates for ever-married women in 12 age-race categories were poststratified to benchmark population values based on data from the Current Population Survey of the U.S. Bureau of the Census.

Quality control procedures for interviewer selection, interviewer training, field listing, and data processing were built into NSFG to minimize nonsampling error and bias. In addition, the nonresponse adjustments in the estimator were designed to minimize the effect of nonresponse bias by assigning to nonrespondents the characteristics of similar respondents. Sampling errors for NSFG were estimated by balanced half-sample replication.

Discussion of the balanced half-sample technique, summary sampling error charts, and detailed information on the NSFG sample design are available in the following report: National Center for Health Statistics, National Survey of Family Growth, Cycle I, sample design, estimation procedures, and variance estimation, by D. K. French, *Vital and Health Statistics,* Series 2-No. 76, DHEW Pub. No. (PHS) 78-1350, Public Health Service, Washington, U.S. Government Printing Office, Jan. 1978.

Health Interview Survey

The Health Interview Survey (HIS) is a continuing nationwide sample survey in which data are collected through personal household interviews. Information is obtained on personal and demographic characteristics, illnesses, injuries, impairments, chronic conditions, utilization of health resources, and other health topics. The household

questionnaire is reviewed each year, with supplemental topics being added or deleted. For most topics, data are collected over an entire calendar year. The universe for HIS is the civilian noninstitutionalized population of the United States. Members of the Armed Forces, U.S. nationals living in foreign countries, and persons who died during the reference period are excluded.

The survey is based on multistage, probability cluster sample of 376 primary sampling units selected from approximately 1,900 geographically defined units in the first stage, and 12,000 segments containing about 42,000 eligible occupied households in the final stage. The usual HIS sample is about 116,000 persons in 40,000 interviewed households in a year. The response rate is ordinarily about 96 percent of the eligible households. National estimates are based on a four-stage estimation procedure involving inflation by the reciprocal of the probability of selection, a nonresponse adjustment, ratio adjustment, and poststratification.

For more detailed information on HIS design, limitations of data, and sampling errors of the estimates, see: National Center for Health Statistics, Current estimates from the Health Interview Survey, United States, 1977, by L. J. Howie and T. F. Drury, *Vital and Health Statistics,* Series 10-No. 126, DHEW Pub. No. (PHS) 78-1554, Public Health Service, Washington, U.S. Government Printing Office, Sept. 1978.

Health Examination Survey

The Health Examination Survey (HES) is a continuing nationwide sample survey conducted by the National Center for Health Statistics in which data for determining the health status of the population are collected through direct standardized physical examinations, clinical and laboratory tests, and measurements. The content of the HES program is revised periodically, and selected components are added or deleted to meet the current needs for health data of this type.

For the first program or cycle of the Health Examination Survey (HES I), 1960–62, data were collected on the total prevalence of certain chronic diseases as well as the distributions of various physical and physiological measures, including blood pressure and serum cholesterol levels. For that program, a highly stratified, multistage probability sample of 7,710 adults, of whom 86.5 percent were examined, was selected to represent the 111 million civilian noninstitutionalized adults 18–79 years of age in the United States at that time. The sample areas consisted of 42 primary sampling units (PSU's) from the 1,900 geographic units.

In 1971, a nutrition surveillance component was added and the survey name was changed to the Health and Nutrition Examination Survey.

For further information on HES I, see: National Center for Health Statistics, Cycle I of the Health Examination Survey, sample and response, United States, 1960–1962, by T. Gordon and H. W. Miller, *Vital and Health Statistics,* PHS Pub. No. 1000-Series 11-No. 1, Public Health Service, Washington, U.S. Government Printing Office, Apr. 1964.

Health and Nutrition Examination Survey

This survey collects health-related data that can be obtained only by direct physical examinations, clinical and laboratory tests, and related measurement procedures. In the first Health and Nutrition Examination Survey (HANES-I), a major purpose was to measure and monitor indicators of the nutritional status of the American people through dietary intake data, biochemical tests, physical measurements, and clinical assessments for evidence of nutritional deficiency. Detailed examinations were given by dentists, ophthalmologists, and dermatologists with an assessment of need for treatment. In addition, data were obtained for a subsample of adults on overall health care needs and behavior, and more detailed examination data were collected on cardiovascular, respiratory, arthritic, and hearing conditions.

The HANES-I target population was the civilian noninstitutionalized population 1–74 years of age residing in the coterminous United States, except for people residing on any of the reservation lands set aside for the use of American Indians. The sample design was a multistage, stratified probability sample of clusters of persons in land-based segments. The sample areas consisted of 65 primary sampling units (PSU's) selected from the 1,900 PSU's in the coterminous United States. A subsample of persons 25–74 years of age was selected to receive the more detailed health examination. Groups at high risk of malnutrition were oversampled at known rates throughout the process.

Household interviews were completed for more than 96 percent of the 28,043 persons selected for the HANES-I sample, and about 75 percent (20,749) were examined between 1971 and 1974.

The estimation procedure used to produce national statistics involved inflation by reciprocals of the probabilities of selection, adjustment for nonresponse, and poststratified ratio adjustment to population totals. Sampling errors also were estimated to measure the reliability of the statistics.

For more information on HANES-I, see: National Center for Health Statistics, Plan and operation of the Health and Nutrition Examination Survey, United States, 1971–1973, by H. W. Miller, *Vital and Health Statistics,* Series 1-Nos. 10a and 10b, DHEW Pub. No. (HSM) 73-1310, Health Services and Mental Health Administration, Washington, U.S. Government Printing Office, Feb. 1973.

Master Facility Inventory

The Master Facility Inventory (MFI) is a comprehensive file of inpatient health facilities in the United States. The three broad categories of facilities in MFI are hospitals, nursing and related care homes, and other custodial or remedial care facilities. To be included in MFI, hospitals must have at least six inpatient beds, and nursing and related care homes must have at least three inpatient beds.

MFI is kept current by the periodic addition of names and addresses obtained from State licensing agencies for all newly established inpatient facilities. In addition, annual surveys of hospitals and periodic surveys of nursing homes and other facilities are conducted to update name and location, type of business, number of beds, and number of residents or patients in the facilities.

From 1968 through 1975, the hospital survey was conducted in conjunction with the American Hospital Association (AHA) Annual Survey of Hospitals. AHA performed the data collection for its member hospitals, while NCHS collected the data for the approximately 400 non-AHA registered hospitals. Since 1976, however, all of the data collection has been performed by AHA.

Hospitals are requested to report data for the full year ending September 30. More than half of the responding hospitals used this reporting period for the 1977 survey. The remaining hospitals used various other reporting periods.

The nursing home and other facilities survey was conducted by the National Center for Health Statistics in 1963, 1967, 1969, 1971, 1973, and 1976. In 1976, data for 16 States were collected at least partially through the Cooperative Health Statistics System (CHSS). There may have been changes in data collection procedures, coverage, definitions, and concepts in preliminary data from these 16 States in 1976.

The response rate for the 1977 hospital survey was about 92 percent. The response rate for the 1976 nursing home and other facilities survey was about 95 percent for the portion of the survey not conducted through CHSS.

Statistics derived from the hospital and nursing home and other facilities surveys were adjusted for both facility and item nonresponse. Missing items on the questionnaire were imputed, when possible, by using information reported by the same facility in a previous survey. When data were not available from a previous census for a responding facility, the data were imputed by using data from similar responding facilities. Similar facilities are defined as those with the same types of business, ownership, service, and approximately the same bed size.

For more detailed information on MFI, see: National Center for Health Statistics, Design and methodology of the 1967 Master Facility Inventory Survey, by G. G. Hollis, *Vital and Health Statistics,* PHS Pub. No. 1000-Series 1-No.9, Public Health Service, Washington, U.S. Government Printing Office, Jan. 1971.

Hospital Discharge Survey

The Hospital Discharge Survey (HDS) is a continuing nationwide sample survey of short-stay hospitals in the United States. The scope of HDS encompasses patients discharged from noninstitutional hospitals, exclusive of military and Veterans Administration hospitals, located in the 50 States and the District of Columbia. Only hospitals having six beds or more for patient use and those in which the average length of stay for all patients is less than 30 days are included in the survey. Although all discharges of patients from these hospitals are within the scope of the survey, discharges of newborn infants from all hospitals are excluded from this report as well as discharges of all patients from Federal hospitals.

The sample was selected from a frame of about 7,500 short-stay hospitals listed in the Master Facility Inventory. A two-stage stratified sample design was used, and hospitals were stratified according to bed size and geographic region. The largest hospitals were selected with certainty in the sample, and the probability of selection of a hospital decreased as the bed size of the hospital decreased. Within each sample hospital, a systematic random sample of discharges was selected from the daily listing sheet. The within-hospital sampling ratio for selecting discharges varied inversely with the probability of selection of the hospital, so that the overall probability of selecting a discharge was approximately the same in each bed-size class.

Survey hospitals used an abstract form to transcribe data from the face sheet of hospital records. Forms were completed either by hospital staff or representatives of the National Center for Health Statistics.

The basic unit of estimation for HDS was the sample patient abstract. The estimation procedure involved inflation by reciprocals of the probabilities of selection, adjustment for nonresponding hospitals and missing abstracts, and ratio adjustments to fixed totals. Of the 535 hospitals selected for the survey, 491 were within the scope of the survey, and 423 participated in the survey in 1977. Data were abstracted from about 224,000 medical records.

For more detailed information on the design of HDS and the magnitude of sampling errors associated with HDS estimates, see: National Center for Health Statistics, Utilization of short-stay hospitals, annual summary for the United States, 1977, by B. J. Haupt, *Vital and Health Statistics,* Series 13-No. 41, DHEW Pub. No. (PHS) 79-1792, Public Health Service, Washington, U.S. Government Printing Office, Mar. 1979.

National Nursing Home Survey

Two sample surveys were conducted by the National Center for Health Statistics to obtain information on nursing homes, their expenditures, residents, staff, and, in the most recent survey, discharged patients. The first survey was conducted between August 1973 and April 1974. The most recent National Nursing Home Survey (NNHS) was conducted from May through December 1977.

Data on facilities were collected by personal interviews with administrators; facility accountants completed questionnaires on expenditures. Resident data were collected by a nurse familiar with the care provided to the resident. The nurse relied on the medical record and personal knowledge of the residents. Employees completed a self-administered questionnaire. Discharge data, collected only in the most recent NNHS, were based on information recorded in the medical record.

For the initial survey conducted in 1973–74, the universe included only those nursing homes that provided some

level of nursing care. Thus homes providing only personal or domiciliary care were excluded. The sample of 2,118 homes was selected from the 17,685 homes that provided some level of nursing care and were listed in the 1971 Master Facility Inventory (MFI) or those which opened for business in 1972. Data were obtained from about 20,600 staff and 19,000 residents. Response rates were 97 percent for facilities, 88 percent for expenditures, 98 percent for residents, and 82 percent for staff.

The scope of the 1977 NNHS encompassed all types of nursing homes, including personal care and domiciliary care homes. The sample of about 1,700 facilities was selected from 23,105 nursing homes in the sampling frame, which consisted of all homes listed in the 1973 MFI and those opening for business between 1973 and December 1976. Data were obtained from about 13,600 staff, 7,000 residents, and 5,100 discharged residents. Response rates were 95 percent for facilities, 85 percent for expenses, 81 percent for staff, 99 percent for residents, and 97 percent for discharges.

Statistics from NNHS were derived by a ratio-estimating procedure. Statistics were adjusted for failure of a home to respond, failure to fill out one of the questionnaires, and failure to complete an item on a questionnaire.

For more information on the 1973–74 NNHS, see: National Center for Health Statistics, Selected operating and financial characteristics of nursing homes, United States, 1973–74 National Nursing Home Survey, by M. R. Meiners, *Vital and Health Statistics,* Series 13-No. 22, DHEW Pub. No. (HRA) 76-1773, Health Resources Administration, Washington, U.S. Government Printing Office, Dec. 1975. For more information on the 1977 NNHS, see: National Center for Health Statistics, Comparison of nursing home residents and discharges, 1977 National Nursing Home Survey, by E. Hing and A. Zappolo, *Advance Data From Vital and Health Statistics,* No. 29, DHEW Pub. No. (PHS) 78-1250, Public Health Service, Hyattsville, Md., May 17, 1978.

National Ambulatory Medical Care Survey

The National Ambulatory Medical Care Survey (NAMCS) is a continuing national probability sample of ambulatory medical encounters. The scope of the survey covers physician-patient encounters in the offices of nonfederally employed physicians classified by the American Medical Association or American Osteopathic Association as "office-based, patient care" physicians. Excluded are visits to hospital-based physicians, visits to specialists in anesthesiology, pathology, and radiology, and visits to physicians who are principally engaged in teaching, research, or administration. Telephone contacts and nonoffice visits are also excluded.

A multistage probability design is employed. The first-stage sample consists of 87 primary sampling units (PSU's) selected from about 1,900 such units into which the United States has been divided. In each sample PSU, a sample of practicing physicians is selected. The final stage involves selection within a randomly assigned 7-day reporting period, and the selection of samples of patient visits during that period.

For the 1977 survey, 3,000 physicians were selected for the sample, of whom 2,493 were found to be eligible for NAMCS and were asked to participate. A total of 1,932 physicians (77.5 percent of those eligible) participated in the study, providing data concerning a random sample of about 51,000 patient visits.

The estimation procedure used in NAMCS basically has three components: (1) inflation by reciprocals of the probabilities of selection, (2) adjustment for nonresponse, and (3) ratio adjustment to fixed totals.

For more detailed information on the design of NAMCS and the magnitude of sampling errors associated with NAMCS estimates, see: National Center for Health Statistics, 1977 Summary, National Ambulatory Medical Care Survey, by T. Ezzati and T. McLemore, *Advance Data From Vital and Health Statistics,* No. 48, DHEW Pub. No. (PHS) 79-1250, Public Health Service, Hyattsville, Md., Apr. 13, 1979.

HEALTH RESOURCES ADMINISTRATION

Bureau of Health Manpower

Medical specialist supply projections

In an ongoing effort, the Bureau of Health Manpower's Division of Manpower Analysis evaluated both the current and future supply of health manpower in the various occupations.

The 1974 supply of active physicians (M.D.'s) by specialty was used as the starting point for the projections of active physicians published in 1978. The major source of data used to obtain 1974 figures was the American Medical Association (AMA) Physician Masterfile.

The projections were derived essentially from two distinct estimation matrices. The first matrix produced a "basic" projection of year-by-year future M.D. graduates and separations from the active workforce by country of medical education. Estimates of first-year enrollments, student attrition, other medical school-related trends, and a model of foreign and Canadian medical graduate immigration were used. The second matrix distributed the future graduates and separations by specialty, disaggregated by country of medical education. Projections of first-year residency trends were used, and deaths and retirements of active practitioners were distributed among the specialties proportionate to the supply in each specialty as of 1974. Mortality and retirement losses were computed by 5-year age cohort on an annual basis, using age distributions and mortality and retirement rates from AMA data.

For more information, see: Bureau of Health Manpower, *The Current and Future Supply of Physicians and Physician Specialists,* DHEW Pub. No. (HRA) 79-13, Health Resources Administration, Hyattsville, Md., 1979.

CENTER FOR DISEASE CONTROL

Bureau of Epidemiology

National Morbidity Reporting System

This is a system for collecting demographic, clinical, and laboratory data primarily from State and territorial health agencies to provide national surveillance for conditions such as rabies, aseptic meningitis, diphtheria, tetanus, encephalitis, foodborne outbreaks, and others. Completeness of reporting varies greatly, since not all cases receive medical care and not all treated conditions are reported. Reporting is voluntary.

Estimates of underreporting have been made for two diseases, measles and viral hepatitis. It is generally accepted that about 10–15 percent of all cases of measles that occur in the United States are reported to the Center for Disease Control (CDC). About 15–20 percent of all cases of viral hepatitis are reported to CDC.

Depending on the disease, data are collected weekly or monthly and are analyzed to detect epidemiologic trends or to locate cases requiring control efforts. Data are published weekly and summarized annually. For more information, see: Center for Disease Control, Reported morbidity and mortality in the United States, 1977, *Morbidity and Mortality Weekly Report,* 26(53), Sept. 1978, or write to Center for Disease Control, Chief, Consolidated Surveillance and Communications Activity, Bureau of Epidemiology, Atlanta, Ga. 30333.

Abortion Surveillance

The Center for Disease Control (CDC) acquires abortion service statistics by State of occurrence from two sources, central health agencies and hospitals and facilities. Since the initiation of epidemiologic surveillance of abortion in 8 States in 1969, the number of States from which statewide abortion data are reported increased to 45 in 1977. Most of the 45 central health agencies have established direct reporting systems, although a few collected data by surveying abortion facilities. Inquiries by CDC to hospitals and facilities provided information for 6 States that did not collect statewide abortion data.

The total number of abortions reported to CDC is about 18 percent less than the total estimated independently by the Alan Guttmacher Institute, the research and development division of the Planned Parenthood Federation of America, Inc.

For more information, see: Center for Disease Control, *Abortion Surveillance, 1977,* Public Health Service, DHEW, Atlanta, Ga., To be published, or write to Center for Disease Control, Director, Family Planning Evaluation Division, Bureau of Epidemiology, Atlanta, Ga. 30333.

Bureau of State Services

Venereal Disease Control Division

All States require that each case of syphilis and gonorrhea that receives medical attention be reported to the State or local health officer. Chancroid, granuloma inguinale, and lymphogranuloma venereum are also reportable in most States. Every 3 months, each State submits to the Public Health Service a statistical summary of cases reported during the quarter. All cases not previously reported in the State, regardless of duration of infection or previous treatment status, are counted in the statistical report of cases. Reported morbidity, as reported cases are sometimes called, indicates the result of case-detection activities.

The trend of rates of reported cases of early syphilis over a period of years may indicate incidence trends if no significant changes have occurred in casefinding efforts or completeness of case reporting. Similarly, the trend of reported cases of syphilis in all stages of disease can indicate prevalence trends, subject to the same limitations. Therefore, trends in reported cases and rates must be interpreted with caution since they reflect not only changes in disease incidence and prevalence but also changes in casefinding efforts and completeness of case reporting.

Cases of primary and secondary syphilis are reportable by law in all 50 States and the District of Columbia, but the reported cases understate actual incidence because: (1) cases occur which are not diagnosed in the primary or secondary stages, and (2) many diagnosed cases are not reported to the health departments. The Venereal Disease Control Division estimates that the actual incidence of primary and secondary syphilis was about 75,000 to 80,000 cases in 1977, of which 20,362 were reported to health departments. A total of 64,473 cases of syphilis (all stages) were reported in 1977.

In general, gonorrhea is underreported for the same reasons as syphilis. But gonorrhea is undetected much more frequently for women than for men because most infected women exhibit no evidence of infection. The Venereal Disease Control Division estimates that 1.6–2.0 million cases of gonorrhea occurred in the United States in 1977, of which 1,000,177 were reported to health departments.

Data are published annually in *STD Fact Sheet* (formerly *VD Fact Sheet*). For more information, see: Center for Disease Control, *STD Fact Sheet, 1977,* 34th ed., DHEW Pub. No. (CDC) 79-8195, Public Health Service, Atlanta, Ga. or write to Center for Disease Control, Bureau of State Services, Technical Information Services, Atlanta, Ga. 30333.

U.S. Immunization Survey

This system is the result of a contractual agreement between the Center for Disease Control and the U.S. Bureau of the Census. Estimates from the Immunization Survey are based on data obtained during the third week of each September for a subsample of households interviewed for the Current Population Survey, which is described separately in this appendix.

The reporting system contains demographic variables and vaccine history along with disease history when relevant to vaccine history. The system is used to estimate the immunization level of the Nation's child population

against the vaccine preventable diseases; from time-to-time, immunization level data on the adult population are collected.

The scope of the U.S. Immunization Survey covers the 50 States and the District of Columbia. In the 1977 sample, approximately 41,000 household units were included in the survey sample. Six thousand sample units were found to be vacant or otherwise not to be interviewed. Of the approximately 35,000 occupied households eligible for interview, about 1,500 were not interviewed because the occupants either were not at home after repeated calls or were unavailable for some other reason.

The estimating procedure that was used involves the inflation of weighted sample results to independent estimates of the civilian noninstitutionalized population of the United States by age and race.

For more information, see: Center for Disease Control, *United States Immunization Survey, 1977,* DHEW Pub. No. (CDC) 79-8221, Public Health Service, Atlanta, Ga., Oct. 1978.

ALCOHOL, DRUG ABUSE, AND MENTAL HEALTH ADMINISTRATION

National Institute of Mental Health

Surveys of Mental Health Facilities

The Survey and Reports Branch of the Division of Biometry and Epidemiology conducts several surveys of mental health facilities. Some of the data in this report are derived from more than one of these surveys. The response rate to most of the items on these surveys is relatively high (90 percent or better) as is the rate for data presented in this report. However, for some survey items, the response rate may be somewhat lower.

The Inventories of Mental Health Facilities are the primary source for NIMH data used in this report. This data system is based on questionnaires mailed by Janurary of each year to mental health facilities in the United States, including psychiatric hospitals, non-Federal general hospitals with psychiatric services, residential treatment centers for emotionally disturbed children, federally funded community mental health centers, freestanding outpatient psychiatric clinics, and other types of multiservice or day-night facilities.

Other surveys conducted by the Survey and Reports Branch encompass sample surveys of patients coming under care in State, county, and private mental hospitals, outpatient psychiatric services, and general hospital inpatient psychiatric units. The purpose of these surveys is to determine the characteristics of patients served by these facilities.

For more information, write: Survey and Reports Branch, Division of Biometry and Epidemiology, National Institute of Mental Health, 5600 Fishers Lane, Rockville, Md. 20857.

Health Care Financing Administration

Office of Research, Demonstrations, and Statistics

Estimates of national health expenditures

Estimates of public and private expenditures for health are compiled annually by type of expenditure and source of funds. The data for several Federal health programs are taken from the Office of Management and Budget's special analysis of health programs, while data for the remaining Federal health programs are supplied directly by the various agencies.

Estimates for non-Federal expenditures come from an array of sources. American Hospital Association data on hospital finances, increased slightly to allow for osteopathic hospitals, are the primary source for estimates relating to hospital care. Estimated expenditures for the services of dentists and physicians in private practice are based on the gross income from self-employed practice reported to the Internal Revenue Service. The salaries of dentists and physicians on the staffs of hospitals and hospital outpatient facilities are considered a component of hospital care. Expenditures for the education and training of medical personnel are considered to be expenditures for education, and where they can be separated, they are excluded from health expenditures. Expenditures for drugs, drug sundries, eyeglasses, and appliances exclude those provided to inpatients and are estimated principally from the report of personal consumption expenditures in the U.S. Department of Commerce's national income accounts in the *Survey of Current Business.* Nursing home care expenditures by both public and private sources are based on data from the National Nursing Home Survey conducted by the National Center for Health Statistics. Data on the financial expenditures of health insurance organizations come from special Social Security Administration analyses of private health insurers. Expenditures for construction represent "value put in place" for hospitals, nursing homes, medical clinics, and medical research facilities but not for private office buildings providing office space for private practitioners.

For more specific information on items included and excluded and on general methodology used, see: Gibson, R.M., National health expenditures, 1978, *Health Care Financing Review,* Vol. 1, No. 1, pp. 1-36, Summer 1979.

DEPARTMENT OF COMMERCE

Bureau of the Census

U.S. Census of Population

The census of population has been taken in the United States every 10 years since 1790. Beginning in 1985,

however, the census will be on a quinquennial basis. In the 1970 census, basic demographic data such as sex, race, age, and marital status were obtained from 100 percent of the enumerated population. In addition, information such as educational attainment, occupational status, and earnings were obtained from a 20-percent sample. More detailed data such as previous residence, veteran status, place of work, and country of birth of parents, were collected from a 15-percent sample; a 5-percent sample was asked about disability status, citizenship, length of marriage, vocational training, and the like. Americans living overseas received a supplemental schedule.

Detailed national data are tabulated and published as are data for areas as small as census tracts.

For information on undercoverage, see: U.S. Bureau of the Census, *Estimates of Coverage of the Population by Sex, Race, and Age, Demographic Analysis*, PHC(E)-4, and for tables of sampling errors for sampled data, see: *Census of Population 1970*, PC(1)-C, General Social and Economic Characteristics, Appendix C.

Current Population Survey

The Current Population Survey (CPS) is a household sample survey of the civilian noninstitutionalized population conducted monthly by the U.S. Bureau of the Census to provide estimates of employment, unemployment, and other characteristics of the general labor force, the population as a whole, and various other subgroups of the population.

A list of housing units from the 1970 census, supplemented by newly constructed units and households known to be missed in the 1970 census, provides the sampling frame in most areas for the present CPS. In some rural locations, current household listings of selected land areas serve as the frame.

The present CPS sample is located in 461 areas comprising 923 counties and independent cities with coverage in every State and the District of Columbia. In an average month during 1975, the number of housing units or living quarters designated for the national sample was about 58,000, of which about 3,000 were found to be nonexistent, demolished, or no longer used as living quarters. Of the remaining 55,000 units assigned for interview, about 45,000 were interviewed households, 2,000 were households at which the members were not available for interview, and 8,000 were found to be vacant, occupied by persons with usual residence elsewhere, or otherwise not eligible for interview.

The estimation procedure used involves inflation by reciprocals of the probabilities of selection, adjustment for nonresponse, and ratio adjustment.

For more information, see: U.S. Bureau of the Census, *The Current Population Survey, Design and Methodology*, Technical Paper 40, Washington, U.S. Government Printing Office, Jan. 1978.

Population estimates and projections

National estimates are derived by use of decennial census data as benchmarks and of data available from various agencies as follows: births and deaths (Public Health Service); immigrants (Immigration and Naturalization Service); the Armed Forces (Department of Defense); net movement between Puerto Rico and the U.S. mainland (Puerto Rico Planning Board); and Federal employees abroad (Civil Service Commission and Department of Defense). State estimates are based on similar data and also on a variety of data series, including school statistics from State departments of education and parochial school systems.

National population projections indicate the approximate future level and characteristics of the population under given assumptions as to future fertility, mortality, and net immigration. The method used to develop the projections involved preparation of projections of each of the components of population change—births, deaths, and net immigration—and the combination of these with July 1 estimates of the current population. Projections for States and metropolitan areas incorporate further assumptions about population redistribution through interarea migration.

Current estimates and projections are generally consistent with official decennial census figures and do not reflect the amount of estimated decennial census underenumeration.

For more information, see: U.S. Bureau of the Census, Projections of the Population of the United States, 1977 to 2050, *Current Population Reports*, Series P-25, No. 704, U.S. Government Printing Office, Washington, D.C. 1977.

DEPARTMENT OF LABOR

Bureau of Labor Statistics

Consumer Price Index

The Consumer Price Index (CPI) is a monthly measure of price change for a fixed "market basket" of goods and services. It is revised periodically to take into account changes in what Americans buy and in the way they live. The latest revision introduced (1) a new CPI for all urban consumers, (2) a revision of the CPI for urban wage earners and clerical workers, and (3) a modification of some categories within the medical care component. The new indexes were introduced with the release of January 1978 data.

In this report, all CPI data shown are for urban wage earners and clerical workers. Prices for 400 items were obtained in urban portions of 39 major statistical areas and 17 smaller cities that were chosen to represent all urban places in the United States. They were collected from about 18,000 establishments—grocery and department stores, hospitals, filling stations, and other types of stores and service establishments.

Prices of food, fuels, and a few other items were obtained every month in all 56 locations. Prices of most other commodities and services were collected every month in the five largest areas and every 3 months in other areas. Prices of most goods and services were obtained by personal visits of the Bureau's trained representatives. Mail questionnaires were used to obtain local transit fares, public utility rates, newspaper prices, fuel prices, and certain other items.

In calculating the index, price changes for the various items in each location were averaged together with weights that represent their importance in the spending of all wage earners and clerical workers. Local data were then combined to obtain a U.S. city average. Separate indexes were also published for 23 areas.

The index measures price changes from a designated reference data—1967—which equals 100. An increase of 22 percent, for example, is shown as 122. This change can also be expressed in dollars as follows: The price of a base period "market basket" of goods and services bought by urban wage earners and clerical workers has risen from $10 in 1967 to $12.20.

For more information, see: Bureau of Labor Statistics, *Consumer Price Index, Concepts and Content over the Years*, BLS Report 517, Washington, U.S. Government Printing Office, May 1978.

Employment and earnings

The Division of Industry Employment Statistics and the Division of Employment and Unemployment Analysis of the Bureau of Labor Statistics (BLS) publish data on employment and earnings. The data are collected by the Bureau of the Census, State Employment Security Agencies, and State Departments of Labor in cooperation with BLS.

The major data source is the Current Population Survey (CPS), a household interview survey conducted monthly by the Bureau of the Census to collect labor force data for BLS. CPS is described separately in this appendix.

Data based on establishment records are also compiled each month from mail questionnaires by BLS, in cooperation with State agencies.

For more information, see: U.S. Department of Labor, Bureau of Labor Statistics, *Employment and Earnings, January 1979*, Vol. 26, No. 1, Washington, U.S. Government Printing Office, Jan. 1979.

ENVIRONMENTAL PROTECTION AGENCY

National Aerometric Surveillance Network

The Environmental Protection Agency (EPA), through extensive monitoring of activities conducted by Federal, State, and local air pollution control agencies, collects data on the five pollutants for which National Ambient Air Quality Standards have been set. These pollution control agencies submit data quarterly to EPA's National Aerometric Data Bank (NADB). There are about 3,400 total stations reporting. Data from some short-term or sporadic monitoring for such purposes as special studies and complaint investigations are usually not included in NADB because the data are not extensive enough to provide equitable comparisons with routine data from permanent monitoring sites.

For more information, see: Environmental Protection Agency, *National Air Quality, Monitoring, and Emissions Trends Report, 1977*, EPA-450/2-78-052, Research Triangle Park, N.C., Dec. 1978, or write to Office of Air Quality Planning and Standards, Environmental Protection Agency, Research Triangle Park, N.C. 27711.

UNITED NATIONS

Demographic Yearbook

The Statistical Office of the United Nations prepares the *Demographic Yearbook*, a comprehensive collection of international demographic statistics.

Questionnaires are sent annually and monthly to more than 220 national statistical services and other appropriate government offices. Data forwarded on these questionnaires are supplemented, to the extent possible, by data taken from official national publications and by correspondence with the national statistical services. To insure comparability, rates, ratios, and percentages have been calculated in the Statistical Office of the United Nations.

Lack of international comparability between estimates arises from differences in concepts, definitions, and time of data collection. The comparability of population data is affected by several factors, including (1) the definitions of the total population, (2) the definitions used to classify the population into its urban and rural components, (3) difficulties relating to age reporting, (4) the extent of over- or under-enumeration, and (5) the quality of population estimates. The completeness and accuracy of vital statistics data also vary from one country to another. Differences in statistical definitions of vital events may also influence comparability.

For more information, see: United Nations, *Demographic Yearbook 1977*, Pub. No. ST/ESA/STAT/SER.R/6, United Nations, New York, N.Y., 1977.

World Health Organization

World Health Statistics Annual

The World Health Organization (WHO) is one of the specialized agencies of the United Nations. WHO publishes the *World Health Statistics Annual* each year.

This publication is the result of a joint effort by the national health and statistical administrations of many countries, the Statistical Office of the United Nations, and the World Health Organization. It is published in three volumes: Volume I–Vital Statistics and Causes of Death; Volume II–Infectious Diseases, Cases and Deaths; Volume III–Health Personnel and Hospital Establishments.

Data in the *World Health Statistics Annual* are provided by national administrators in answer to questionnaires, or they are obtained from annual national publications. Some of the data are reprinted from the *Demographic Yearbook*.

In many cases, complete comparability of data between countries is not possible. Differences in the definition of a hospital may occur. The level of general education and professional training of health personnel may vary from country to country. Completeness of coverage also varies. Noncomparability of diagnostic coding of data can also occur.

For more information, see: World Health Organization, *World Health Statistics Annual, 1977,* Vols. I, II, III, Geneva, Switzerland, World Health Organization, 1977.

ALAN GUTTMACHER INSTITUTE

Abortion Survey

The Alan Guttmacher Institute (AGI) conducts an annual survey of abortion providers. Data are collected from hospitals, nonhospital clinics, and physicians identified as providers of abortion services. A survey universe of 3,092 hospitals, nonhospital clinics, and individual physicians was compiled. To assess the completeness of the provider and abortion counts, supplemental surveys were conducted of a sample of obstetrician-gynecologists and a sample of hospitals (not in original universe) that were identified as providing abortion services through the American Hospital Association Survey.

The number of abortions estimated by AGI is about 22 percent more than the number reported to the Center for Disease Control.

For more information, write to: The Alan Guttmacher Institute, 515 Madison Avenue, New York, N.Y. 10022.

AMERICAN HOSPITAL ASSOCIATION

Annual Survey of Hospitals

Data from this survey are based on questionnaires that are sent to all hospitals in the United States and its associated areas accepted for registration by the American Hospital Association (AHA). In 1977, questionnaires were mailed to 7,176 registered hospitals. Of these, 7,099 hospitals were located in the 50 States and the District of Columbia, and 77 were located in the U.S. possessions. Overall, 6,542 hospitals reported data, a response rate of 91.2 percent. For nonreporting hospitals and for the survey questionnaires of reporting hospitals on which some information was missing, estimates were made for all data except those on bassinets and facilities. The estimates of the missing data were based on data furnished by reporting hospitals that were similar in terms of bed-size category, type of control, major type of service provided, and type of stay in the hospitals for which data were not reported.

Hospitals are requested to report data for the full year ending September 30. More than half of the responding hospitals used this reporting period in the 1977 survey. The remaining hospitals used various reporting periods.

For more information on the AHA Annual Survey of Hospitals, see: American Hospital Association, *Hospital Statistics, 1978 Edition, Data from the American Hospital Association 1977 Annual Survey*–Chicago, Ill., 1978.

AMERICAN MEDICAL ASSOCIATION

Physician Masterfile

A masterfile of physicians has been maintained by the American Medical Association (AMA) since 1906. Today, the Physician Masterfile contains data on almost every physician in the United States, both members and nonmembers of AMA, and on those graduates of American medical schools temporarily practicing overseas. The file also includes graduates of foreign medical schools who are in the United States.

A file is initiated on each individual upon entry into medical school or, in the case of foreign graduates, upon entry into the United States. A census of physicians is conducted every 3 years to update the file information on professional activities, specialization, and present employment status. The last census from which data are available was conducted in 1973. Between censuses, AMA keeps the file current by continuous checks of professional publications and State licensure notices for changes in any physician's activities. When a change is noted, the physician is sent another copy of the questionnaire. In 1975, approximately 3,500 of these questionnaires were mailed per week. The general response rate to the questionnaires is about 87 percent.

For more information on the AMA Physician Masterfile, see: Department of Statistical Analysis: *Physician Distribution and Medical Licensure in the U.S., 1977,* Chicago, American Medical Association, 1979.

Surveys of medical groups

The American Medical Association (AMA) Center for Health Services Research and Development conducted surveys of group medical practice in 1965, 1969, and 1975.

In the 1975 survey, questionnaires were mailed to all 13,169 known or potential groups in the United States and its territories in December 1974. Information was solicited in several areas of concern, including the age of groups, specialty composition, form of organization, administration and management, income distribution, facilities and services provided, prepayment activity, and allied health manpower employed. Fifty-three percent of the groups responded to the first mailing. Several followup mailings, personal letters, and telephone calls raised the response rate to 96 percent.

Of the 13,169 questionnaires mailed, 1,889 were not usable because they were from groups no longer in existence or dissolved or from groups listed in AMA records under more than one name. Another 2,269 were eliminated because they did not meet the AMA definition of group practice. This resulted in a usable response of 8,483 groups, 22 of which were in Puerto Rico and other U.S. possessions.

For more information, see: Goodman, L.J., Bennette, E.H., and Odem, R.J., *Group Medical Practice in the U.S., 1975,* Chicago, American Medical Association, 1977.

Annual Census of Hospitals

From 1920 to 1953, the Council on Medical Education and Hospitals of the American Medical Association (AMA) conducted annual censuses of all hospitals registered by AMA.

In each annual census, questionnaires were sent to hospitals asking for the number of beds, bassinets, births, patients admitted, average census of patients, lists of staff doctors and interns, and other information of importance at the particular time. Response rates were always nearly 100 percent.

The community hospital data from 1940 and 1950 presented in this report were calculated using published figures from the AMA Annual Census of Hospitals. Although the hospital classification scheme used by AMA in published reports is not strictly comparable with the definition of community hospitals, methods were employed to achieve the greatest comparability possible.

For more information on the AMA Annual Census of Hospitals, see: American Medical Association, Hospital Service in the United States, *Journal of the American Medical Association,* Vol. 11, No. 116, pp. 1055-1144, 1940.

APPENDIX II

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APPENDIX II

Glossary of Terms

General terms

Social and demographic terms

Age.—Age is reported as age at last birthday, i.e., age in completed years, often calculated by subtracting date of birth from the reference date, with the reference date being the date of the examination, interview, or other contact with an individual.

Age adjustment of death rates.—Age adjustment, using the direct method, is the application of the age-specific death rates in a population of interest to a standardized age distribution in order to eliminate the differences in observed rates due to age differences in population composition. This is usually done when comparing two or more populations at one point in time, or one population at two or more points in time.

In this report, the mortality rates are age adjusted to the U.S. population enumerated in 1940. Adjustment is based on 11 age intervals as follows: under 1, 1–4, 5–14, 15–24, 25–34, 35–44, 45–54, 55–64, 65–74, 75–84, and 85 years and over. The data from the Health Interview Survey, National Ambulatory Medical Care Survey, and the Hospital Discharge Survey are age adjusted to the 1970 civilian noninstitutionalized population. In these cases, adjustment is based on four age intervals; for Health Interview Survey, under 17, 17–44, 45–64, and 65 years and over; for National Ambulatory Medical Care Survey and Hospital Discharge Survey, under 15, 15–44, 45–64, and 65 years and over.

Average annual rate of change (percent change).—In this report, average annual rates of change or growth rates are calculated as follows:

$$\left(\sqrt[N]{\frac{P_n}{P_o}} - 1 \right) \times 100$$

where P_n = later time period
P_o = earlier time period
and N = number of years in interval.

This geometric rate of change assumes that a variable increases or decreases at the same rate during each year between the two time periods.

Color and race.—The Federal Government's data systems often classify individuals into two color groups ("white" and "all other") or three racial groups ("white," "black," and "other races"). Generally, "other races" includes American Indian, Chinese, Japanese, and others, while "white" includes Mexican and Cuban. Beginning in 1976, Federal data collections specify ethnic origin, including Spanish heritage.

Depending on the data source, the classification by color and race may be based on self-classification or on observation by an interviewer or other persons filling out the questionnaire. In the national vital registration system, newborn infants are assigned the race of their parents; if the parents are of different races and one is white, the child is assigned the other parent's race; if either parent is Hawaiian, the child is classified as Hawaiian; in all other cases, the child is assigned the father's race. Prior to 1964, the national vital registration system classified all births for which race was unknown as "white." The Health Interview Survey assigns to the race of the father children whose parents are of different races.

Family income.—For purposes of the Health Interview Survey and Health and Nutrition Examination Survey, all people within a household related to each other by blood, marriage, or adoption constitute a family. Family income, then, is the total income received by the members of a family in the 12 months prior to interview, including wages, salaries, rents from property, interest, dividends, profits, and fees from their own business, pensions, and help from relatives.

Hispanic origin.—In the National Survey of Family Growth, the respondent is classified as being of Hispanic origin if she reports her origin or descent as Mexican, Chicano, Mexican American, Puerto Rican, Cuban, or other Spanish, regardless of whether she also mentions any other origin.

In tables where data are presented for women according to race and Hispanic origin, women of Hispanic origin are included in the statistics for white and black women if they were identified as such by the interviewer.

Marital status.—The population is classified through self-reporting into the categories married and unmarried. Married includes all married people including those separated from their spouses. Unmarried includes those

who are single (never married), divorced, or widowed. The Abortion Surveillance reports of the Center for Disease Control classify separated people as unmarried for all States except Rhode Island.

Population.—The U.S. Bureau of the Census collects and publishes data on several different types of population in the United States. Various statistical systems then use the appropriate population in calculating rates.

> *Total population* is the population of the United States, including all members of the Armed Forces living in foreign countries, Puerto Rico, Guam, and the U.S. Virgin Islands. Other Americans abroad (e.g., civilian Federal employees and dependents of members of the Armed Forces or other Federal employees) are not included.
>
> *Resident population* is the population living in the United States. This includes members of the Armed Forces stationed in the United States and their families as well as foreigners working or studying here; it excludes foreign military, naval, and diplomatic personnel and their families located here and residing in embassies or similar quarters as well as Americans living abroad. The resident population is often the denominator when calculating birth and death rates and incidence of disease.
>
> *Civilian population* is the resident population excluding members of the Armed Forces. Families of members of the Armed Forces are included, however.
>
> *Civilian noninstitutionalized population* is the civilian population not residing in institutions. Institutions include correctional institutions, detention homes, and training schools for juvenile delinquents; homes for the aged and dependent (e.g., nursing homes and convalescent homes); homes for dependent and neglected children; homes and schools for the mentally or physically handicapped; homes for unwed mothers; psychiatric, tuberculosis, and chronic disease hospitals and residential treatment centers. This population is the denominator in rates calculated for the National Center for Health Statistics' Health Interview Survey, Health and Nutrition Examination Survey, Hospital Discharge Survey, and National Ambulatory Medical Care Survey.

Poverty level.—As used in the National Survey of Family Growth, poverty level is calculated by dividing the total family income by the weighted average threshold income of nonfarm families with the head under 65 years of age based on the poverty level shown in U.S. Bureau of the Census *Current Population Reports,* Series P-60, No. 106, "Money Income in 1975 of Families and Persons in the United States," table A-3 (for Cycle II), and No. 98, "Characteristics of the Low-Income Population, 1973," table A-3 (for Cycle I). This definition takes into account the sex of the family head and the number of persons in the family. Total family income includes income from all sources for all members of the respondent's family.

Geographic terms

Division and region.—The 50 States and the District of Columbia are grouped for statistical purposes by the U.S. Bureau of the Census into nine divisions within four regions. The groupings are as follows:

NORTHEAST

New England
Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut

Middle Atlantic
New York, New Jersey, Pennsylvania

NORTH CENTRAL

East North Central
Michigan, Wisconsin, Ohio, Indiana, Illinois

West North Central
Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas

SOUTH

South Atlantic
Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida

East South Central
Kentucky, Tennessee, Alabama, Mississippi

West South Central
Arkansas, Louisiana, Oklahoma, Texas

WEST

Mountain
Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada

Pacific
Washington, Oregon, California, Alaska, Hawaii

Metropolitan.—Any county within a standard metropolitan statistical area is metropolitan. Other counties are *nonmetropolitan.*

Registration area.—The United States has separate registration areas for birth, death, marriage, and divorce statistics, which collect data annually from States whose registration data are at least 90-percent complete.

The *death registration area* was established in 1900 with 10 States and the District of Columbia, while the *birth registration area* was established in 1915, also with 10 States and the District of Columbia. Both areas have covered the entire United States since 1933. Currently, Puerto Rico, the U.S. Virgin Islands, and Guam are also included, although in statistical tabulations they are not part of the "United States" total.

Reporting area.—In the national vital registration system, reporting requirements on birth certificates vary

according to State. Thus, different numbers of States report various characteristics. For example, births to unmarried women are reported on the birth certificate only in 37 States and the District of Columbia, and the month during which prenatal care began is reported in 44 States and the District of Columbia.

Standard metropolitan statistical area (SMSA).—This is a concept developed for use in statistical reporting and analysis. Except in the New England States, an SMSA is a county or a group of contiguous counties containing at least one city of 50,000 inhabitants or more or "twin cities" with a combined population of at least 50,000. In addition, contiguous counties are included in an SMSA if they are essentially metropolitan in character (based on criteria of labor force characteristics and population density) and are socially and economically integrated with the central city or cities.

In New England, towns and cities rather than counties are the geographic components of the SMSA. Since National Center for Health Statistics (NCHS) data are not coded to identify all towns, NCHS uses the metropolitan State economic area (MSEA), which is made up of county units, for reporting data in New England.

Health status and determinants

Fertility

Abortion.—The Center for Disease Control's surveillance program counts *legal abortions* only. What constitutes a legal abortion varies, depending on a State's regulations about when one may be performed.

Birth rate.—This measure divides the number of live births in a population in a given period by the resident population at the middle of that period. The rate may be restricted to births to women of specific age, race, marital status, or geographic location, or it may be related to the entire population.

Fecundity.—In the National Survey of Family Growth, a woman is considered to be sterile if she reports it was impossible for her and her husband to conceive as a result of an operation, accident, or illness which occurred more than 3 years before the interview—before January 1970 for Cycle I, or before January 1973 for Cycle II. All other women are considered to be fecund, able to conceive, at the beginning of the period for which their use of family planning services is reported.

Gestation.—For both the national vital registration system and the Center for Disease Control's Abortion Surveillance, the period of gestation is defined as beginning with the first day of the last normal menstrual period and ending with the day of birth.

Live birth.—In the World Health Organization's definition, also adopted by the United Nations and the National Center for Health Statistics, a live birth is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life such as heartbeat, umbilical cord pulsation, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached. Each product of such a birth is considered live born.

Live-birth order.—In the national vital registration system, this item from the birth certificate indicates the number of live births a woman has had, counting the birth being recorded.

Mortality

Cause of death.—For the purpose of national mortality statistics, every death is attributed to one underlying condition, based on information reported on the death certificate, and utilizing the international rules for selecting the underlying cause of death from the reported condition. For data years 1968–78, the *Eighth Revision International Classification of Diseases, Adapted for Use in the United States* is being used for coding. Earlier data used the then current revision of the *International Classification of Diseases*. For 1979, the Ninth Revision is being used.

Death rate.—This measure divides the number of deaths in a population in a given period by the resident population at the middle of that period. It may be restricted to deaths in specific age, race, sex, or geographic groups, or it may be related to the entire population.

Eighth Revision International Classification of Diseases, Adapted for Use in the United States (ICDA).—ICDA and the *International Classification of Diseases* (ICD), upon which ICDA is based, classify morbidity and mortality information for statistical purposes. Both are arranged in 17 main sections. Most of the diseases are arranged according to their principal anatomical site, with special sections for infective and parasitic diseases; neoplasms; endocrine, metabolic, and nutritional diseases; mental diseases; complications of pregnancy and childbirth; certain diseases peculiar to the perinatal period; and ill-defined conditions. Separate sections provide a classification of injuries according to the external cause giving rise to the injury, usually used for cause-of-death categories, and a classification according to the nature of injury (such as puncture, open wound, or burn), usually used for morbidity categories. Supplementary sections in ICDA on special conditions and examinations without sickness (Y00-Y13) and on surgical operations and diagnostic and other therapeutic procedures are used for coding information on ambulatory and inpatient utilization.

ICD was first used in 1900 and has been revised about every 10 years since then. The Ninth Revision, introduced in 1977, is being used to code U.S. mortality data beginning with 1979. A modification of the Ninth Revision is being prepared for use with U.S. morbidity data.

Infant mortality.—Infant mortality is the death of live-born children who have not reached their first birthday and is usually expressed as a rate (i.e., the number of infant deaths during a year per 1,000 live births reported in the year).

Life expectancy.—Life expectancy is the average number of years of life remaining to a person at a particular age and is based on a given set of age-specific death rates, generally the mortality conditions existing in the period mentioned. Life expectancy may be determined by race, sex, or other characteristics using age-specific death rates for the population with that characteristic.

Determinants and measures of health

Condition.—A health condition is a departure from a state of physical or mental well-being. Conditions, except impairments, are coded according to the *Eighth Revision International Classification of Diseases, Adapted for Use in the United States* (ICDA).

Based on duration, there are two categories of conditions, acute and chronic. In the Health Interview Survey, an *acute condition* is a condition which has lasted less than 3 months and has involved either a physician visit (medical attention) or restricted activity. The category includes respiratory conditions (ICDA codes 460–486, 501, 508–516, 519, 783), injuries (ICDA codes N800–N870, N872–N884, N890–N894, N900–N994, N996–N999), infective and parasitic conditions (ICDA codes 000–136), and digestive conditions (ICDA codes 520.6–521.5, 521.7–523.9, 525–530, 535–543, 560–561, 564–577, 784–785). In the Health Interview Survey, a *chronic condition* is any condition lasting 3 months or more or is one of certain conditions classified as chronic regardless of their time of onset. The National Nursing Home Survey uses a specific list of conditions classified as chronic, also disregarding time of onset.

Disability.—Disability is any temporary or long-term reduction of a person's activity as a result of an acute or chronic condition. It is often measured in terms of the number of days that a person's activity has been reduced.

Disability day.—The Health Interview Survey identifies several types of days on which a person's usual activity is reduced because of illness or injury (reported for the 2-week period preceding the week of the interview). These short-term disability days are not mutually exclusive categories but are defined as follows:

A *restricted-activity day* is any day on which a person cuts down on his or her usual activities for all or most of that day because of an illness or an injury. Restricted-activity days are unduplicated counts of bed-disability, work-loss, and school-loss days as well as other days during which a person cuts down on his or her usual activities.

A *bed-disability day* is a day on which a person stays in bed for more than half of the daylight hours (or normal waking hours) because of a specific illness or injury. All *hospital days* are bed-disability days. Bed-disability days may also be work-loss or school-loss days.

A *work-loss day* is a day on which a person did not work at his or her job or business for at least half of his or her normal workday because of a specific illness or injury. The number of work-loss days is determined only for currently employed persons.

A *school-loss day* is a day on which a child did not attend school for at least half of his or her normal schoolday because of a specific illness or injury. School-loss days are determined only for children 6–16 years of age.

Former smoker.—Any person who has smoked at least 100 cigarettes during his or her entire life but who reports smoking no cigarettes at the present time is a former smoker.

Incidence.—Incidence is the number of cases of disease having their onset during a prescribed period of time and is often expressed as a rate (e.g., the incidence of measles per 1,000 children 5–15 years of age during a year). Incidence is a measure of morbidity or other events that occur within a specified period of time.

Limitation of activity.—Each person identified by the Health Interview Survey as having a chronic condition is classified according to the extent to which his or her activities are limited because of the condition as follows:

(1) Persons unable to carry on *major activity*.
(2) Persons limited in the amount or kind of major activity performed.
(3) Persons not limited in major activity but otherwise limited.
(4) Persons not limited in activity.

Major activity (or *usual activity*) is the principal activity of a person or of his or her age-sex group. For 1–5 years of age, it refers to ordinary play with other children; for 6–16 years of age, it refers to school attendance; for 17 years of age and over it usually refers to a job, housework, or school attendance.

Notifiable disease.—A notifiable disease is one that health providers are required, usually by law, to report to Federal, State, or local public health officials when diagnosed. Notifiable diseases are those of public interest by reason of their contagiousness, severity, or frequency.

Particulate matter.—Particulate matter is defined as particles of solid or liquid matter in the air, including both nontoxic materials (soot, dust, and dirt) and toxic materials (lead, asbestos, suspended sulfates and nitrates, etc.).

Pollutant.—A pollutant is any substance that renders the atmosphere or water foul or noxious to health.

Prevalence.—Prevalence is the number of cases of a disease, infected persons, or persons with some other attribute present during a particular interval of time. It is often expressed as a rate (e.g., the prevalence of diabetes per 1,000 persons during a year).

Self-assessment of health.—In the Health Interview Survey, the respondents are asked to evaluate the health of everyone in their household compared with other people of the same age.

Utilization and resources

Ambulatory care

Dental visit.—The Health Interview Survey counts visits to a dentist's office for treatment or advice, including services by a technician or hygienist acting under the dentist's supervision, as dental visits. Services provided to hospital inpatients are not included.

Disposition of visit.—As used by the National Ambulatory Medical Care Survey, this term describes the variety of followup procedures that a physician may plan for the patient, ranging from no followup to specific return contacts, to referral to other providers of care.

Eighth Revision International Classification of Diseases, Adapted for Use in the United States.—See "Mortality" section.

Family planning visit.—In the National Survey of Family Growth, women are considered to have made a family planning visit if they answer affirmatively when asked if they have talked to a doctor or other trained medical personnel about a method for delaying or preventing pregnancy. Those who have such visits are asked the date of the visit.

Office.—In the Health Interview Survey, an office refers to the office of any physician in private practice, including physicians connected with prepaid group practices. In the National Ambulatory Medical Care Survey, an office is any location for a physician's ambulatory practice other than hospitals, nursing homes, other extended care facilities, patients' homes, and industrial clinics. However, private offices in hospitals are included.

Physician visit.—The Health Interview Survey counts as a physician visit a visit in person or by telephone to a doctor of medicine or doctor of osteopathy for the purpose of examination, diagnosis, treatment, or advice. The service may be provided directly by the physician or by a nurse or other person acting under the physician's supervision. Contacts involving services provided on a mass basis are not included, nor are contacts for hospital inpatients.

Physician visits are generally classified by the type of place of visit. In the Health Interview Survey, this includes the *office, hospital outpatient clinic* or *emergency room, telephone* (advice given by a physician in a telephone call), *company or industrial clinic* (units at a place of business that provide treatment through a physician or trained nurse), *home* (any place in which a person was staying at the time a physician was called there), as well as other places.

In the National Ambulatory Medical Care Survey, an *office visit* is any direct personal exchange between an ambulatory patient and a physician, or members of his or her staff, for the purposes of seeking care and rendering health services.

Place of last family planning visit.—Women with a family planning visit in the last 3 years are asked where the last (most recent) visit took place. "Own physician" includes visits of the respondent with her own physician, whether in the physician's office or in a hospital; it includes group practices and prepaid medical organizations. "Organized medical services" includes visits to all other places: general clinics, family planning clinics, hospitals, or elsewhere.

Principal diagnosis.—In the National Ambulatory Medical Care Survey, this is the physician's diagnosis of the patient's most important problem or complaint as evaluated at the time of the visit.

Seriousness of problem.—In the National Ambulatory Medical Care Survey, the physician indicates for each patient visit the seriousness of the problem, condition, or symptom which the patient says caused the visit. Seriousness refers to the physician's clinical judgment as to the extent the patient would be impaired if no care were given. It is expressed as very serious, serious, slightly serious, or not serious.

Inpatient care

Average daily census or *average daily patients.*—This refers to the average number of inpatients receiving care each day during a reporting period, excluding newborns.

Average length of stay.—In the Hospital Discharge Survey, the average length of stay is the total number of patient days accumulated at the time of discharge counting the date of admission but not the date of discharge by patients discharged during a reporting period, divided by the number of patients discharged.

As measured in the National Nursing Home Survey, *length of stay for residents* is the time from their admission until the reporting time, while the *length of stay for discharges* is the time between the date of admission and the date of discharge.

Bed.—Any bed that is set up and staffed for use for inpatients is counted as a bed in a facility. In the Master Facility Inventory, the count is of beds at the end of the reporting period; for the American Hospital Association, it is of the average number of beds during the entire period. The World Health Organization defines a hospital bed as one regularly maintained and staffed for the accommodation and full-time care of a succession of inpatients and situated in a part of the hospital where continuous medical care for inpatients is provided.

Day.—According to the American Hospital Association and Master Facility Inventory, days or *inpatient days* are the number of adult and pediatric days of care rendered during a reporting period. Days of care for newborns are excluded.

In the Health Interview Survey, *hospital days during the year* refer to the total number of hospital days occurring in the 12-month period prior to the interview week. A *hospital day* is a night spent in the hospital for persons admitted as inpatients to a hospital.

In the Hospital Discharge Survey, *days of care* refer to the total number of patient days accumulated by patients at the time of discharge from non-Federal short-stay hospitals during a reporting period. All days from and including the date of admission to but not including the

date of discharge are counted. A *patient* is a person who is formally admitted to the inpatient service of the hospital for observation, care, diagnosis, or treatment.

Discharge.—The Health Interview Survey defines a *hospital discharge* as the completion of any continuous period of stay of 1 night or more in a hospital as an inpatient, excepting the period of stay of a well newborn infant.

According to the Hospital Discharge Survey, American Hospital Association, and Master Facility Inventory, this is the formal release of an inpatient by a hospital, i.e., the termination of a period of hospitalization (including stays of 0 nights) by death or by disposition to a place of residence, nursing home, or another hospital. In this report, newborn infants are excluded.

In the National Nursing Home Survey, this is the formal release of a resident by a nursing home.

First-listed diagnosis.—In the Hospital Discharge Survey, this is the diagnosis listed first on the face sheet of the medical record.

Hospital.—According to the American Hospital Association (AHA) and Master Facility Inventory (MFI), hospitals are institutions licensed as hospitals whose primary function is to provide diagnostic and therapeutic patient services for medical conditions and which have at least six beds, an organized physician staff, and continuous nursing services under the supervision of registered nurses. AHA data differ slightly from those of MFI, since data from MFI reflect osteopathic hospitals as well as hospitals not registered with AHA. Non-AHA hospitals comprise 5–10 percent of all hospitals in the country. The World Health Organization considers an establishment a hospital if it is permanently staffed by at least one physician, can offer inpatient accommodation, and can provide active medical and nursing care.

Hospitals may be classified by type of service, ownership, and length of stay.

> *Federal hospitals* are operated by the Federal Government. All other hospitals are *non-Federal hospitals.*
>
> *General hospitals* provide both diagnostic and treatment services for patients with a variety of medical conditions, both surgical and nonsurgical. According to the World Health Organization, these are hospitals that provide medical and nursing care for more than one category of medical discipline (e.g., general medicine, specialized medicine, general surgery, specialized surgery, obstetrics, etc.); excluded are hospitals, usually ones in rural areas, which provide a more limited range of care. *Psychiatric hospitals* are ones whose major type of service is psychiatric care. See also "Psychiatric care."
>
> *Short-stay hospitals* in the Hospital Discharge Survey are those in which the average length of stay is less than 30 days. The American Hospital Association and Master Facility Inventory define *short-term hospitals* as hospitals in which more than half the patients are admitted to units with an average length of stay of less than 30 days and *long-term hospitals* as ones in which more than half the patients are admitted to units with an average length of stay of 30 days or more. The Health Interview Survey defines *short-stay hospitals* as any hospital or hospital department in which the type of service provided is general; maternity; eye, ear, nose, and throat; children's; or osteopathic.
>
> *Specialty hospitals* provide a particular type of service, such as psychiatric, tuberculosis, chronic disease, rehabilitation, maternity, and alcoholic or narcotic, to the majority of their patients.

Nursing care.—Nursing care is the provision of any of the following services: application of dressings or bandages; bowel and bladder retraining; catheterization; enema; full bed bath; hypodermic, intramuscular, or intravenous injection; irrigation; nasal feeding; oxygen therapy; and temperature-pulse-respiration or blood pressure measurement.

Nursing home.—The minimum standards and regulations for nursing homes vary among the States so that no uniform definition is possible. However, the Master Facility Inventory includes in its count only facilities licensed by the States in which they are located. The homes are then classified according to the level of care they provide, as follows:

> *Nursing care homes* must employ one or more full-time registered or licensed practical nurses and must provide nursing care to at least half the residents.
>
> *Personal care homes with nursing* have some but fewer than half the residents receiving nursing care. In addition, such homes must employ one or more registered or licensed practical nurses or must provide administration of medications and treatments in accordance with physician's order, supervision of self-administered medications, or three or more personal services.
>
> *Personal care homes without nursing* have no residents receiving nursing care. These homes provide administration of medications and treatments in accordance with physician's order, supervision of self-administered medications, or three or more personal services.
>
> *Domiciliary care homes* primarily provide domiciliary care but also provide one or two personal services.

In the 1977 National Nursing Home Survey, all four categories of homes were included. In the 1973–74 survey, only nursing homes providing some level of nursing care were classified as nursing homes.

> *Skilled nursing facilities* provide the most intensive nursing care available outside of a hospital. Facilities certified by Medicare provide posthospital care to eligible Medicare enrollees. Facilities certified by Medicaid as skilled nursing facilities provide skilled nursing services on a daily basis to individuals eligible for Medicaid benefits.

Intermediate care facilities are certified by the Medicaid program to provide health-related services on a regular basis to Medicaid eligibles who do not require hospital or skilled nursing facility care but do require institutional care above the level of room and board.

Occupancy rate.—The Master Facility Inventory and American Hospital Association define *hospital occupancy rate* as the average daily census divided by the number of hospital beds during a reporting period. The *occupancy rate for other facilities* is calculated as the number of residents reported at the time of the interview divided by the number of beds reported.

Outpatient visit.—According to the American Hospital Association, these are visits by patients not lodged in the hospital for medical, dental, or other services. See also "Ambulatory care."

Primary diagnosis.—In the National Nursing Home Survey, this is the primary condition at the last examination as extracted from the resident's medical record.

Resident.—In the National Nursing Home Survey, a resident is a person who has been formally admitted to but not discharged from an establishment.

Psychiatric care[1]

Addition.—An individual is classified as an addition to a psychiatric facility by being a new admission, a readmission, or a return from leave to either an inpatient or an outpatient psychiatric facility.

Mental disorder.—A mental disorder is any of several disorders listed in Section V of the *Eighth Revision International Classification of Diseases, Adapted for Use in the United States* (ICDA).

Mental health facility.—A mental health facility is an administratively distinct public or private agency or institution whose primary concern is the provision of direct mental health services to the mentally ill or emotionally disturbed. Facilities include public and private psychiatric hospitals, psychiatric units of general hospitals, residential treatment centers (for emotionally disturbed children), federally funded community mental health centers, freestanding outpatient psychiatric clinics, multiservice mental health facilities, and halfway houses.

Psychiatric hospitals are hospitals primarily concerned with providing inpatient care and treatment for the mentally ill. *Psychiatric inpatient units of Veterans Administration general hospitals* and *Veterans Administration neuropsychiatric hospitals* are often combined into the category *Veterans Administration psychiatric hospitals* because of their similarity in size, operation, and length of stay. Other psychiatric hospitals include State and county mental hospitals and private mental hospitals.

General hospitals providing psychiatric services are hospitals that knowingly and routinely admit patients to a separate psychiatric unit for the purpose of diagnosing and treating psychiatric illness.

Residential treatment centers (for emotionally disturbed children) are residential institutions primarily serving emotionally disturbed children and providing treatment services, usually under the supervision of a psychiatrist.

Federally funded community mental health centers are legal entities through which comprehensive mental health services are provided to a delineated catchment area. This mental health delivery system may be implemented by a single facility (with or without subunits) or by a group of affiliated facilities which make available at least the following essential mental health services: inpatient, day treatment, outpatient, emergency care, and community consultation and education.

Freestanding outpatient psychiatric clinics are administratively distinct facilities, the primary purpose of which is to provide nonresidential mental health service and where a psychiatrist assumes medical responsibility for all patients and/or directs the mental health program.

Service mode.—Service mode and *treatment modality* refer generally to the kinds of mental health service available: inpatient care, outpatient care, day treatment, etc.

Inpatient care is the provision of mental health treatment to people requiring 24-hour supervision.

Outpatient care is the provision of mental health treatment on an outpatient basis and does not involve any overnight stay in an inpatient facility.

Day treatment is the provision of a planned therapeutic program during most or all of the day for people needing broader programs than are possible through outpatient visits but who do not require full-time hospitalization.

Manpower

Full-time equivalent employee (FTE).—The American Hospital Association and Master Facility Inventory use an estimate of full-time equivalent employees that counts two part-time employees as one full-time employee, a *full-time employee* being someone working 35 hours a week or more. The National Nursing Home Survey uses an estimate of full-time employees that counts 35 hours of part-time employees' work per week as equivalent to one full-time employee.

Group practice.—Group practice is the application of services by three or more physicians formally organized to provide medical care, consultation, diagnosis, and/or treatment through the joint use of equipment and personnel and with the income from medical practice distributed

[1] The definitions for psychiatric care are those used by the National Institute of Mental Health.

in accordance with methods previously determined by members of the group.

Physician.—Physicians are licensed doctors of medicine or osteopathy classified by the American Medical Association and others through self-reporting, as follows:

Active physicians or *professionally active physicians* are ones currently practicing, regardless of the number of hours worked per week.

Federal physicians are employed by the Federal Government; *non-Federal* or *civilian physicians* are not.

Licensed physicians are authorized to practice in a State. Every State (and the District of Columbia) requires that physicians and dentists be licensed there in order to practice in that State.

Office-based physicians are physicians who spend the plurality of their time working in practices based in private offices; *hospital-based physicians* spend the plurality of their time as salaried physicians in hospitals.

Private practice physicians are independent of any external policy control and are self-employed or salaried by a partnership.

See also "Professional manpower."

Physician speciality.—A physician specialty is any specific branch of medicine that a physician may concentrate in. The specialty classification used by the Bureau of Health Manpower (BHM) and National Ambulatory Medical Care Survey (NAMCS) follow the American Medical Association categories:

Primary care specialties include general practice (or family practice), internal medicine, and pediatrics.

Medical specialties include, along with internal medicine and pediatrics, the areas of allergy, cardiovascular disease, dermatology, gastroenterology, pediatric allergy and cardiology, and pulmonary diseases.

Surgical specialties include general surgery, neurological surgery, obstetrics and gynecology, ophthalmology, orthopedic surgery, otolaryngology, plastic surgery, colon and rectal surgery, thoracic surgery, and urology. *Other specialities* covered by NAMCS are geriatrics, neurology, preventive medicine, psychiatry, and public health. Other specialties covered by BHM are aerospace medicine, anesthesiology, child psychiatry, neurology, occupational medicine, pathology, physical medicine and rehabilitation, psychiatry, public health, and radiology.

Place of employment.—The classification of people employed in the health service industry by place of employment is a U.S. Bureau of the Census adaptation of the U.S. Office of Management and Budget's *Standard Industrial Classification Manual, 1967*, which classified people according to health service industry codes 801–809.

Professional manpower.—Professional manpower includes chiropractors, dentists, dental hygienists, licensed practical nurses, pharmacists, physical therapists, physicians, podiatrists, and registered nurses as well as other occupations not covered in this report.

In the United States, counts of these professionals include only those licensed in the State where they practice, with licensure usually requiring the completion of an appropriate degree or certificate program for that profession. In international counts prepared by the World Health Organization, only those professionals active in their profession are counted.

Professionals may be classified according to specialty, place of practice, or other criteria. See "Physician."

Health expenditures

Consumer Price Index (CPI).—The CPI is prepared by the U.S. Bureau of Labor Statistics. It is a measure of the changes in average prices of the goods and services purchased by urban wage earners and by clerical workers and their families. The medical care component of the CPI shows trends in medical care prices based on specific indicators of hospital, medical, dental, and drug prices.

A revised revision of the CPI has been in use since January 1978, and changes are noted where applicable in this report.

Economic Stabilization Program (ESP).—This Federal program was established to control wages and prices. On August 15, 1971, all wages and prices were frozen for a period of 90 days, and a system of wage and price controls, administered through a cost-of-living council, was implemented. Controls continued, with periodic changes in the flexibility and intensity with which they were enforced, until their legislative authority expired in April 1974.

Gross national product (GNP).—This is the most comprehensive measure of a nation's total output of goods and services. In the United States, the GNP represents the dollar value in current prices of all goods and services produced for sale plus the estimated value of certain imputed outputs (i.e., goods and services that are neither bought nor sold). The GNP is the sum of (1) consumption expenditures by both individuals and nonprofit organizations plus certain imputed values; (2) business investment in equipment, inventories, and new construction; (3) Federal, State, and local government purchases of goods and services; and (4) the sale of goods and services abroad minus purchases from abroad.

Health insurance plans.—Health insurance plans are formal plans with defined membership and benefits, designed to pay all or part of the hospital, physician, or other medical expenses of the insured individual. The difference types of plans include prepaid group plans.

Prepaid group plans involve physician group practices which provide a comprehensive range of health care services to an enrolled population for a fixed prepaid capitation payment. *Health Maintenance Organizations* are public or private oganizations that provide a

comprehensive range of health care services, either directly or under arrangement with others, to an enrolled population for a fixed prepaid capitation payment; prepaid group practice plans are one form of Health Maintenance Organization.

Medicaid (Title XIX).—This program is federally aided but State operated and administered. It provides medical benefits for certain low-income persons in need of medical care. The program, authorized in 1965 by Title XIX of the Social Security Act, categorically covers participants in the Aid to Families with Dependent Children program as well as some participants in the Supplemental Security Income program and other people deemed medically needy in a participating State. States also determine the benefits covered, rates of payment for providers, and methods of administering the program.

Medicare (Title XVIII).—This is a nationwide health insurance program providing health insurance protection to people 65 years of age and over, people eligible for social security disability payments for over 2 years, and people with end-stage renal disease, regardless of income. The program was enacted July 30, 1965, as Title XVIII, *Health Insurance for the Aged,* of the Social Security Act, and became effective on July 1, 1966. It consists of two separate but coordinated programs: hospital insurance (Part A) and supplementary medical insurance (Part B).

National health expenditures.—This measure estimates the amount spent for all health services and supplies and health-related research and construction activities consumed in the United States during a specified time period. Detailed estimates are available by source of expenditure (e.g., consumer out-of-pocket, private health insurance, and government programs) and by type of expenditure (e.g., hospitals, physicians, and drugs). Data are compiled from a variety of sources that collect data from the providers of care.

Health services and supplies expenditures are outlays for goods and services relating directly to patient care plus expenses for administering health insurance programs and for government public health activities. This category is equivalent to total national health expenditures minus expenditures for research and construction.

Private expenditures are outlays for services provided or paid for by nongovernmental sources—consumers, insurance companies, private industry, and philanthropic organizations.

Public expenditures are outlays for services provided or paid for by Federal, State, and local government agencies or expenditures required by governmental action (such as workmen's compensation insurance payments).

Personal health care expenditures.—These are outlays for goods and services relating directly to patient care. The expenditures in this category are total national health expenditures minus expenditures for research and construction, expenses for administering health insurance programs, and government public health activities.

Guide to Tables

(The numbers refer to table numbers in this volume. All tables in this volume contain time trends. The Guide to Tables in Health, United States, 1978 contains a cumulative guide for the first three reports, Health, United States, 1975, 1976-77, and 1978)

I. HEALTH STATUS AND DETERMINANTS	Age	Sex	Color or race	Family income	Location of residence	Other variables	Geographic area		
							Region	Division, State	International
A. Fertility									
General	1-3, 7		1-3, 7			2, 3, 7			
Teenagers	4		4						
Abortion	5		5			5, 6			
B. Mortality									
General	8	8	8			16			
Infant			10, 11					11	12
Fetal, perinatal			10						12
Life expectancy	9	9, 13							13
Heart disease	14	14	14			16			
Ischemic heart disease	15	15	15						
Cancer	17	17	17			16			
Respiratory cancer	18	18	18						
C. Determinants and measures of health									
Prenatal care			20						
Immunization	21								
Cigarette smoking	26-28	26-28	26, 27						
Air pollution						31			
Self-assessment of health	23	23	23	23	23		23		
Limitation of activity	23	23	23	23	23		23		
Disability days	25								
Restricted-activity days	24	24	24	24	24		24		
Bed-disability days	24	24	24	24	24		24		
Acute conditions	25								
Diseases, notifiable						22			
Cholesterol, high	29	29							
Hypertension	30	30	30						
Birthweight, low			19					19	

Guide to Tables—Continued

II. UTILIZATION OF HEALTH RESOURCES	Age	Sex	Color or race	Family income	Location of residence	Other variables	Geographic region
A. Ambulatory							
All physician visits							
Source or place	32	32	32	32	32		32
Interval since last visit	33	33	33	33	33		33
Physician's office							
Principal diagnosis	34	34					
Visit characteristics	35, 36	35, 36	35, 36	36	36		36
Physician's specialty	35	35	35				
Dentist visits, interval since last visit	37	37	37	37	37		37
Family planning visits	38		38	38		38	
B. Inpatient Care							
Short-stay hospitals							
Discharges, general	41, 42	42	42	42	42	39, 41	42
Surgery	41, 43	43				41	
Diagnosis	40	40					
Days of care, general	41, 42	42	42	42	42	39, 41	42
Surgery	41					41	
Diagnosis	40	40					
Mental health facilities additions						46	
Nursing homes							
Residents	45	45	45			44, 45	
Primary diagnosis						44	

Guide to Tables—Continued

III. HEALTH CARE RESOURCES	Occupation or industry	Specialty	Type of practice	Other variables	Geographic area	
					Region	Division
A. Manpower						
Persons active in health field	47, 48					
Graduates (projections)		54				
Physicians						
Total active				49		
Medical doctors		51, 55	50			
Active non-Federal M.D.'s		52	52		52	
Group practice					53	53

	Specialty	Type of ownership	Beds	Employees	Outpatient visits	Occupancy rates	Certification	Geographic area	
								Region	Division, State
B. Facilities									
Short-stay hospitals	56	56	56						
Long-stay hospitals	61	61	61						
Community hospitals			57	59	60	58			59, 60
Nursing homes		62	62, 63				62	62	63

IV. HEALTH CARE EXPENDITURES	Age	Type of expenditure	Source of funds or payment	Other variables	Geographic region
National health expenditures		73, 74	70, 71	64	
Public program expenditures (including Medicare and Medicaid)	79	79-81			
Personal health care expenditures	78		72, 78	65	
Consumer Price Index		66-69			
Hospital costs and expenses				75, 76	
Nursing home charges	77	77		77	77
Health research and development expenditures			82	83, 84	

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